

HP StorageWorks

Fabric Manager 4.4.x user guide

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Fabric Manager 4.4.x user guide

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About this guide

This user guide provides comprehensive information to help you administer, operate, maintain, and troubleshoot HP StorageWorks Fabric Manager 4.4.x (note that 4.4.x designates versions 4.4.0 and later).

Intended audience

This document is intended for use by systems administrators and technicians.

Related documentation

Documentation, including white papers and best practices documents, is available via the HP website. Please go to:

<http://www.hp.com/country/us/eng/prodserv/storage.html>

To access 4.x related documents:

1. Locate the **Networked storage** section of the web page.
2. Under **Networked storage**, go to the **By type** subsection.
3. Click **SAN infrastructure**. The SAN infrastructure page displays.
4. Locate the **Fibre Channel Switches** section.

Locate the **B-Series Fabric** subsection, and then go to the appropriate subsection, such as **Enterprise Class** for the SAN Director 2/128.

To access 4.x documents (such as this document), select the appropriate product, for example **SAN Director 2/128 & 2/128 Power Pack** or **Core Switch 2/64 & Core Switch 2/64 Power Pack**.

The switch overview page displays.

5. Go to the **Product information** section, located on the far right side of the web page.
6. Click **Technical documents**.
7. Follow the on-screen instructions to download the applicable documents.

Document conventions and symbols

Table 1 Document conventions

Convention	Element
Medium blue text: Figure 1	Cross-reference links and e-mail addresses
Medium blue, underlined text (http://www.hp.com)	Web site addresses
Bold font	<ul style="list-style-type: none">• Key names• Text typed into a GUI element, such as into a box• GUI elements that are clicked or selected, such as menu and list items, buttons, and check boxes
<i>Italics font</i>	Text emphasis
Monospace font	<ul style="list-style-type: none">• File and directory names• System output• Code• Text typed at the command-line
<i>Monospace italic font</i>	<ul style="list-style-type: none">• Code variables• Command-line variables
Monospace, bold font	Emphasis of file and directory names, system output, code, and text typed at the command-line



WARNING! Indicates that failure to follow directions could result in bodily harm or death.



CAUTION: Indicates that failure to follow directions could result in damage to equipment or data.



IMPORTANT: Provides clarifying information or specific instructions.



NOTE: Provides additional information.



TIP: Provides helpful hints and shortcuts.

HP technical support

Telephone numbers for worldwide technical support are listed on the following HP web site:
<http://www.hp.com/support/>. From this web site, select the country of origin.



NOTE: For continuous quality improvement, calls may be recorded or monitored.

Obtain the following information before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

HP Storage web site

The HP web site has the latest information on this product, as well as the latest drivers. Access storage at:
<http://www.hp.com/country/us/eng/prodserv/storage.html>. From this web site, select the appropriate product or solution.

HP authorized reseller

For the name of your nearest HP authorized reseller:

- In the United States, call 1-800-345-1518.
- Elsewhere, visit <http://www.hp.com> and click **Contact HP** to find locations and telephone numbers.

1 Requirements, installation, and support

This chapter provides the system requirements needed to install Fabric Manager and also describes how to install the Fabric Manager client and server software on the supported operating systems. Consult the following sections for system and operating system requirements and also any installation, upgrade, or uninstall information:

- [System requirements and supported operating systems](#), page 19
- [Installing Fabric Manager](#), page 21
- [Copying an installation from server to server](#), page 64
- [Launching Fabric Manager](#), page 66
- [Upgrading Fabric Manager](#), page 67
- [Registering Fabric Manager](#), page 68
- [Uninstalling Fabric Manager](#), page 68

System requirements and supported operating systems

The system requirements for the Fabric Manager client and server software depend on the size the fabric and if you are using one or more machines for the client and server software.

Fabrics with more than 1280 ports *should not* have the Fabric Manager client and server software running on the same machine.

For a fabric with 1281 to 2560 ports or 51 to 80 switches, you should run the Fabric Manager client and server software on separate machines. Adhere to the system requirements for each as listed in [Table 2](#).

Each Fabric Manager server can support up to five Fabric Manager clients (not running on the same machine).

The Fabric Manager client accesses any managed switches through an Ethernet connection. If your client and server are on different machines, you must ensure that both machines (client and server) have access to the switches.

Table 2 System requirements for client and server machines

Operating system	Machine type	Requirements		
		1-512 Ports (1-20 Switches)	513-1280 Ports (21-50 Switches)	1281-2560 Ports (51-80 Switches)
Windows®	Client	800 MHz CPU 256 MB RAM 512 MB virtual memory	1.5 GHz CPU 512 MB RAM 512 MB virtual memory	1.5 GHz CPU 512 MB RAM 512 MB virtual memory
	Server	1.8 GHz P4 512 MB RAM 512 MB virtual memory	2.0 GHz P4 768 MB RAM 512 MB virtual memory	2 x 2.5 GHz P4 CPU 2 GB RAM 1 GB virtual memory
	Combined *	1.8 GHz P4 768 MB RAM 1 GB virtual memory	2 x 2.5 GHz P4 CPU 2 GB RAM 1 GB virtual memory	Not recommended
Solaris	Client	Ultra 5 300 MHz CPU 512 MB RAM 512 MB virtual memory	Ultra 10 400 MHz CPU 768 MB RAM 512 MB virtual memory	Ultra 30 400 MHz CPU 1 GB RAM 512 MB virtual memory
	Server	Ultra 10 400 MHz CPU 512 MB RAM 512 MB virtual memory	Ultra 60 2 x 450 MHz CPU 1 GB RAM 512 MB virtual memory	Ultra 60 2 x 450 MHz CPU 2 GB RAM 1 GB virtual memory
	Combined *	Ultra 10 400 MHz CPU 1 GB RAM 512 MB virtual memory	Ultra 60 2 x 450 MHz CPU 1 GB RAM 1 GB virtual memory	Not recommended
*Requirements for a combined installation assumes one client and server. HP recommends separate machines to running additional clients.				
Minimum hard disk space required for installation is: 325 MB (Windows) and 400 MB (Solaris). After installation, HP recommends a minimum free disk space of 2 GB.				
The Fabric Manager client and Fabric Manager server must be running the same version of Fabric Manager or you will not be able to launch Fabric Manager client.				

Fabric Manager client and server software are supported by the Windows and Solaris operating systems listed in [Table 3](#). You need to ensure that the operating system is supported for both the client and the server used in your environment.

Table 3 Supported operating systems

Fabric Manager client		Fabric Manager server	
• Windows 2000	• Solaris 2.7	• Windows 2000	• Solaris 2.8
• Windows 2003	• Solaris 2.8	• Windows 2003	• Solaris 2.9
• Windows NT® 4.0	• Solaris 2.9	• Windows XP	
• Windows XP®			

Fabric Manager displays a switch description of the switch type in the At-A-Glance window in the Overview view. See [Table 4](#) for the complete list of switch types and switch descriptions supported by Fabric Manager.

Table 4 Supported switch models and corresponding fabric manager description

HP StorageWorks switch model	Fabric Manager description
Fibre Channel Storage Switch 8	1 Gbit 8-port entry switch
Fibre Channel Storage Switch 16	1 Gbit 16-port entry switch
StorageWorks SAN Switch 8	1 Gbit 8-port switch
SAN Switch 16	1 Gbit 16-port switch
SAN Switch 2/8-EL	2 Gbit 8-port entry-level switch
SAN Switch 2/8V	2 Gbit 8-port switch with 2 switch limit
SAN Switch 2/16	2 Gbit 16-port switch
SAN Switch 2/16V	2 Gbit 16-port switch with 2 switch limit
SAN Switch 2/32	2 Gbit 32-port switch
SAN Switch 4/32	4 Gbit 32-port switch
Core Switch 2/64	2 Gbit Core Switch
SAN Director 2/128	2 Gbit 128-port SAN Director
Multi-protocol Router	2 Gbit FC / 1 GbE 16-port Fabric Application Platform

Installing Fabric Manager

This section describes how to install the Fabric Manager client and server software on the supported operating systems. You can choose to install both the Fabric Manager server and client simultaneously on the same machine, or install the Fabric Manager server or client individually, or to install the *Evaluation* version of Fabric Manager. Before you install Fabric Manager, see ["Planning for the installation"](#) on page 21 for additional installation information.

Go to the following sections for specific installation information:

- [Planning for the installation](#), page 21
- [Installing Fabric Manager client and server \(for Windows\)](#), page 24
- [Installing Fabric Manager client \(for Windows\)](#), page 37
- [Installing Fabric Manager server \(for Windows\)](#), page 40
- [Installing the evaluation version \(for Windows and Solaris\)](#), page 43
- [Installing Fabric Manager client and server \(for Solaris\)](#), page 44
- [Installing Fabric Manager client \(for Solaris\)](#), page 56
- [Installing Fabric Manager server \(for Solaris\)](#), page 60

Planning for the installation

Prior to installing Fabric Manager, take a look at [Table 5](#) for installation notes and troubleshooting information (including information specific to the Windows and Solaris environments).

Table 5 Installation notes and troubleshooting information

Area	Description
Java™ Runtime Environment (JRE)	The JRE used by Fabric Manager is embedded in the Fabric Manager install image (a separate Java installation is not required). During the Fabric Manager installation, the JRE included in the Fabric Manager install image is installed in the same directory where Fabric Manager is installed. This JRE is available only for Fabric Manager. The Fabric Manager JRE installation does not set or modify any Java-related environment variables or Windows registry entries. This JRE does not replace or conflict with any other JRE installed on the system (for example, this JRE is not used by Advanced Web Tools). You can install or run any other application (such as Advanced Web Tools) using a different JRE; the two JREs will not conflict with each other. Refer to the <i>HP StorageWorks Fabric Manager 4.4.x release notes</i> to determine the JRE version included in Fabric Manager.
Video drivers	Make sure your system has the latest video drivers installed before you install Fabric Manager. As an added precaution, you should also upgrade to the latest Microsoft® DirectX drivers. This should fix any interaction problems between the JRE, the DirectX drivers, and the video drivers.
Install wizard	If the install wizard does not appear during the installation, run the DOS command <code>dxdiag</code> and verify that the graphics tests run without error. If any Microsoft DirectX files are missing or any diagnostics fail, go to the Microsoft web site and upgrade to the latest version of DirectX.
Advanced Web Tools	Advanced Web Tools requires a Java Plug-in and a compatible web browser. Refer to the <i>HP StorageWorks Fabric OS 4.x Advanced Web Tools user guide</i> to determine the Java Plug-in and web browser requirements.
Fabric Manager server	If you try to install the Fabric Manager server immediately after closing a Fabric Manager client, the install wizard indicates that the port is currently in use. Wait approximately five minutes after closing all clients before installing the Fabric Manager server. This allows the Fabric Manager server time to free the connection port.
IP connection to switches	The Fabric Manager client and server software poll different fabric information directly, necessitating access to each switch through an IP connection. Make sure that the network environment does not have a proxy server or firewall between the switches and the server and clients. If a proxy server or firewall exists, ensure that proper rules are set up to allow access.
Blocked port numbers	For some Fabric Manager functions to behave correctly, TCP/UDP port numbers 20, 21 (FTP), 23 (telnet/sectelnet), 80 (HTTP), and 111 (RPC mapping) and 600 through 1023 must not be blocked by a proxy server, network firewall, or secure Fabric OS policy for HTTP or API. Also, port numbers 897 and 898 (API), 16099 (fabric discovery), and 1024+ (API) must not be blocked. See Chapter 16, "Security administration" for information about secure Fabric OS policies for HTTP.
HTTP	HTTP must be enabled on each switch in the SAN that you want to discover, monitor, and configure with Fabric Manager. Each supported switch (see Table 4 on page 21) has HTTP enabled automatically. Refer to the <i>HP StorageWorks Fabric OS 4.x command reference guide</i> for information about enabling HTTP with the CLI (if necessary), or see Chapter 16, "Security administration" for information about secure Fabric OS policies for HTTP.

Table 5 Installation notes and troubleshooting information (continued)

Area	Description
Solaris	<ul style="list-style-type: none">• When you install Fabric Manager over an existing version on a UNIX® system, the install wizard prompts you to select the location where the existing version of Fabric Manager is installed. The install wizard then finds the existing serial number and license key, and attempts to validate them. If the serial number and license key are valid, the install wizard skips the Get User Input window (see Figure 1 on page 25) and goes directly to the Choose Install Set window (see Figure 3 on page 26). The serial number and license key are saved. If the serial number and license key are not valid, you must re-enter the serial number and license key to install the Full version of Fabric Manager.• Make sure that the recommended J2SE patches for Solaris Java applications are installed. Use the appropriate patch for your version of Solaris. These patches can be found at: http://sunsolve.sun.com/pub-cgi/show.pl?target=patches/patch-access Note that issues may also be encountered when using XWindows emulators from Windows to access the Sun host.• If you are installing the Fabric Manager client on Solaris with a BASH as the default shell, you must run the <code>bash --login</code> command before launching the Fabric Manager client or Fabric Manager will not run correctly.

Table 5 Installation notes and troubleshooting information (continued)

Area	Description
Windows	<ul style="list-style-type: none">• When you install Fabric Manager over an existing version, the install wizard finds the existing serial number and license key and attempts to validate them. If the serial number and license key are valid, the install wizard skips the Figure 1 window on page 25 and goes directly to the Figure 3 window on page 26. The serial number and license key are saved. If the serial number and license key are not valid, you must re-enter the serial number and license key to install the Full version of Fabric Manager.• If you launch the Fabric Manager install wizard on a Windows XP or 2003 machine and an After Installation window appears, click Cancel to exit. The After Installation window provides access to a Windows program that exists only on a few Windows XP or 2003 machines (depending on your Windows image). If you do not cancel this program, your Fabric Manager shortcut is moved to the All Users folder after the installation is complete. Also, if you subsequently uninstall Fabric Manager, the uninstall wizard is then unable to remove the Fabric Manager menu item from the Start > Programs menu.• To find the name of the Windows authentication domain that must be specified during installation, open a DOS window and issue the <code>set</code> command. The alias <code>USERDOMAIN</code> indicates the active domain. If the client and server reside on different Microsoft domains, both domains must have trusts established between them or Fabric Manager is not then able to authenticate the client. Note that the domain name required is not the internet domain (such as <code>corp.mycompany.com</code>); it is the domain name Microsoft uses for authentication.

Installing Fabric Manager client and server (for Windows)

To install the Fabric Manager client and server simultaneously on one Windows machine, follow these steps:

1. Double-click the **Windows** folder from the Fabric Manager Installation CD-ROM.
2. Double-click the **Install** icon.

If you have a previous licensed version of Fabric Manager server already on your machine, the InstallAnywhere dialog box opens; then, the Choose Install Set window appears (see [Figure 3](#) on page 26). Skip to [step 6](#).

If you do not have a previous licensed version of Fabric Manager server already on your machine (or have uninstalled it), or if you have the Evaluation version of Fabric Manager server on your machine, the InstallAnywhere dialog box opens; then, the Get User Input window appears (see [Figure 1](#)).

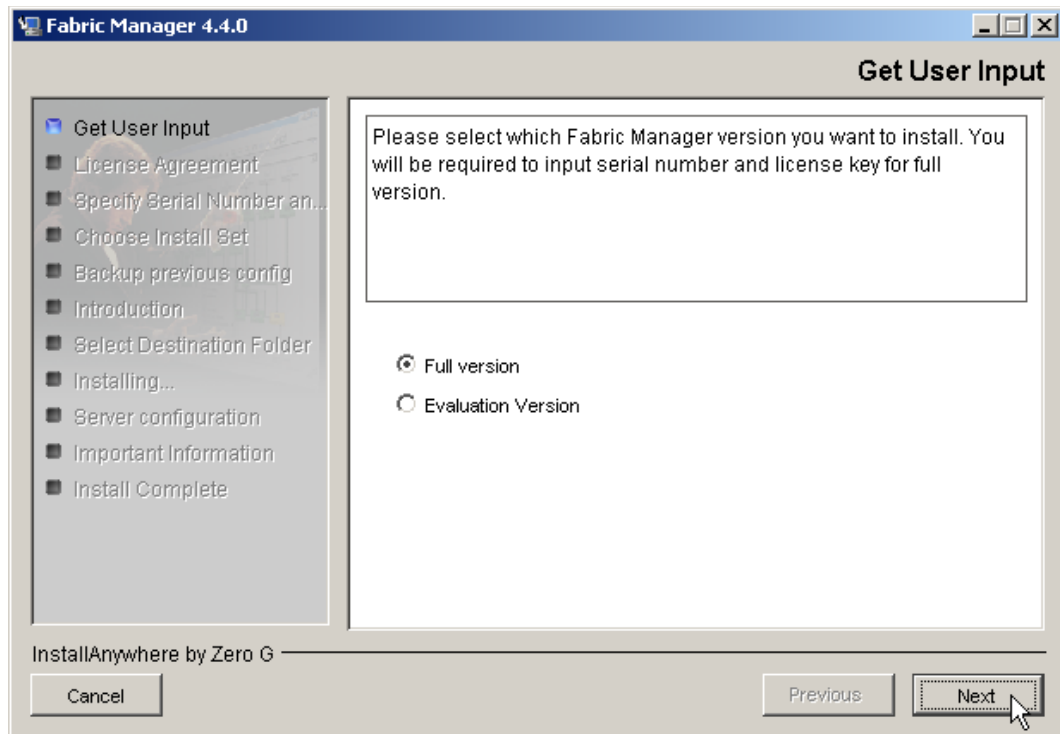


Figure 1 Select full or evaluation version for installation

3. Select the version you would like to install (**Full** or **Evaluation**); then click **Next**.

A valid serial number and license key are required to install the Full version of Fabric Manager. You cannot continue installing the Full version without a valid serial number and license key. See ["Installing the evaluation version \(for Windows and Solaris\)"](#) on page 43 for additional information about installing it and using Fabric Manager for a 60-day trial period.

4. Accept the license agreement (for either the Full or Evaluation version).

If you are installing the Full version, the Specify Serial Number and License Key window is displayed (see [Figure 2](#)).

If you are installing the Evaluation version, the Choose Install Set window is displayed (see [Figure 3](#)). Skip to [step 6](#).

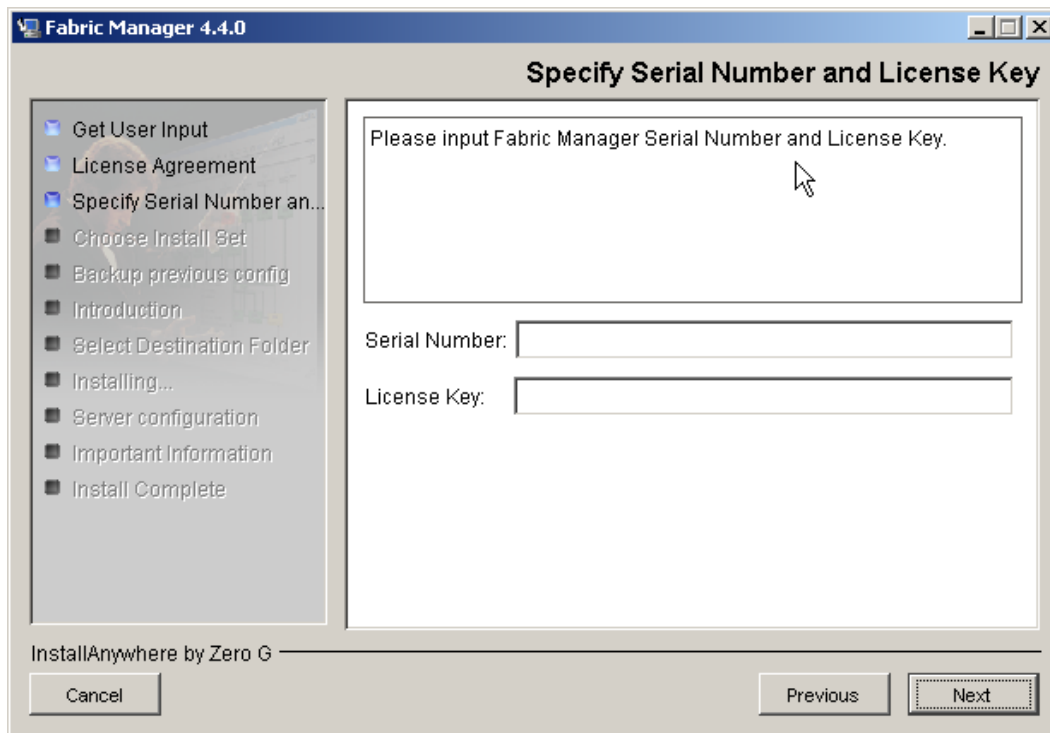


Figure 2 Specify serial number and license key

5. Enter a valid serial number and license key; and click **Next**.

Fabric Manager begins configuring your machine, then the Choose Install Set window is displayed (see [Figure 3](#)).

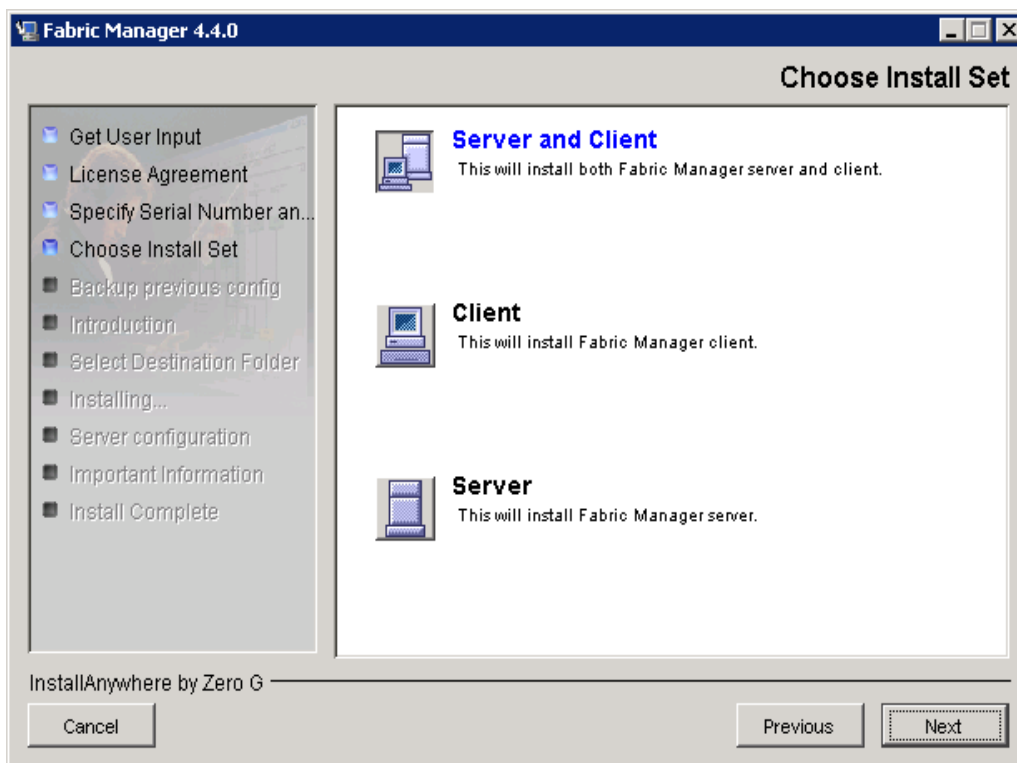


Figure 3 Choose install set (client, server, or server and client)

6. Click the **Server and Client** icon and then click **Next**.

If you already have an earlier version of Fabric Manager server installed (earlier than v4.2.0), you can make a copy of your database and migrate it to the new version of Fabric Manager (see [Figure 4](#)).

If you already have Fabric Manager v4.2.0 or later installed, the install wizard provides you the choice of migrating your existing database automatically, or removing it (see [Figure 8](#) on page 30). Skip to [step 11](#).

If you do not currently have a version of Fabric Manager server installed, the Introduction window appears (see [Figure 9](#) on page 30). Skip to [step 12](#).

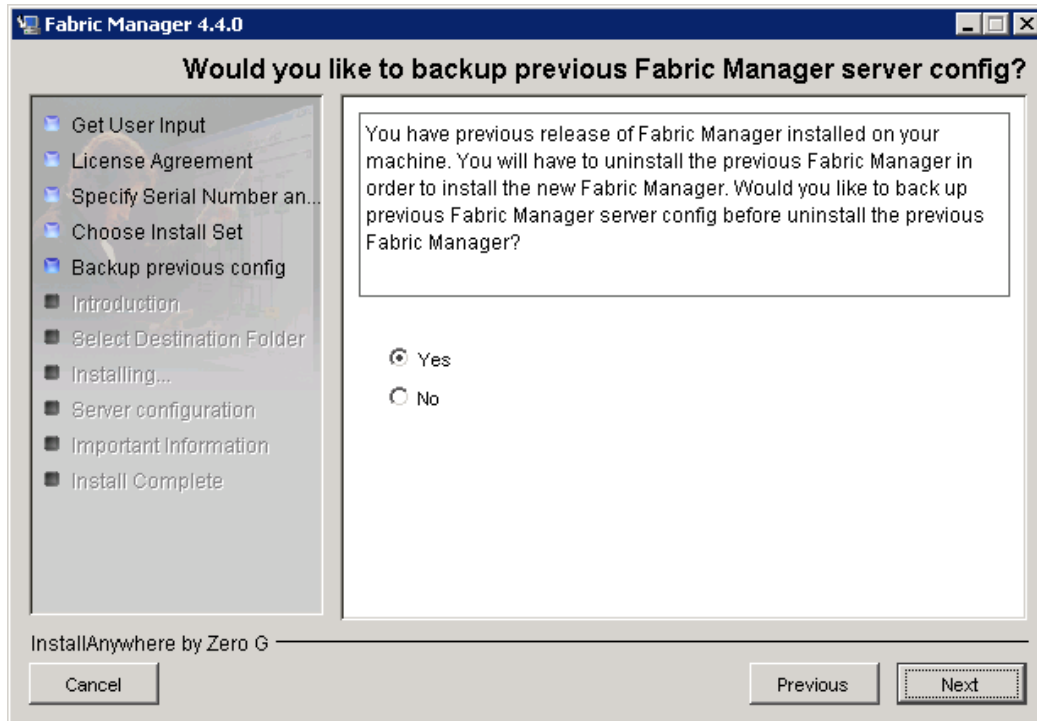


Figure 4 Notification to back up previous configuration

7. Select **Yes** and then click **Next**.

The Choose a Folder window appears (see [Figure 5](#)).

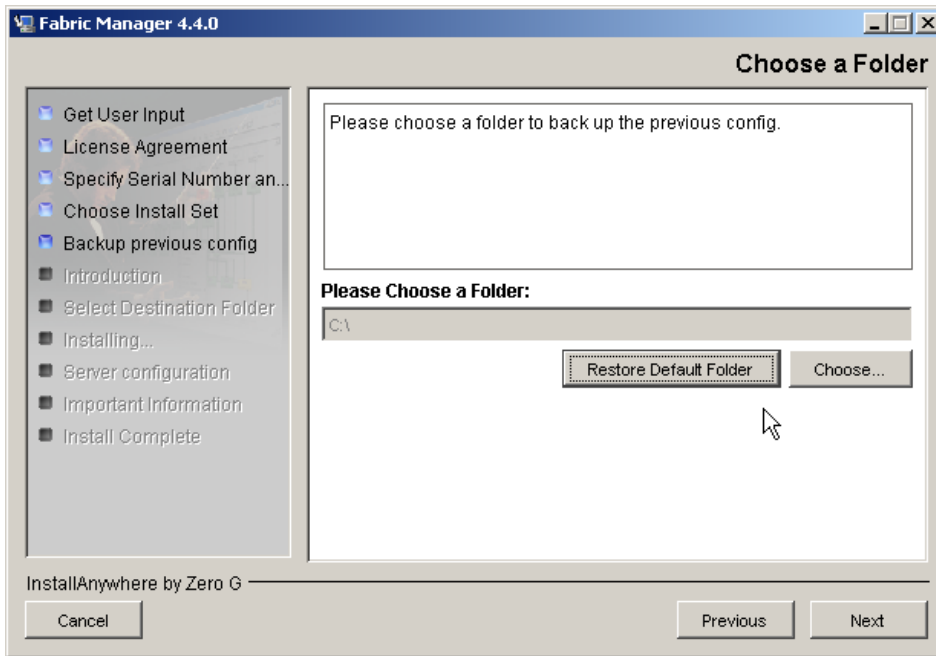


Figure 5 Choose folder to back up previous configuration

8. Select a backup folder where you want to back up the existing database and then click **Next**.
The Configuration to Import window appears (see [Figure 6](#)).

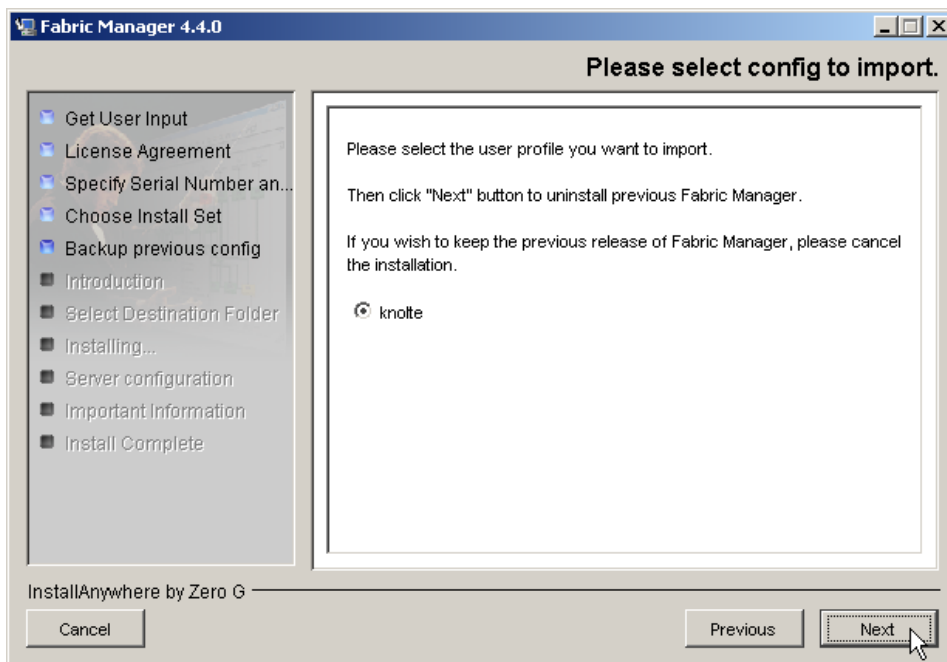


Figure 6 Select configuration to import

9. Select the configuration you want to import and then click **Next**.
The Uninstall Warning window appears (see [Figure 7](#)).

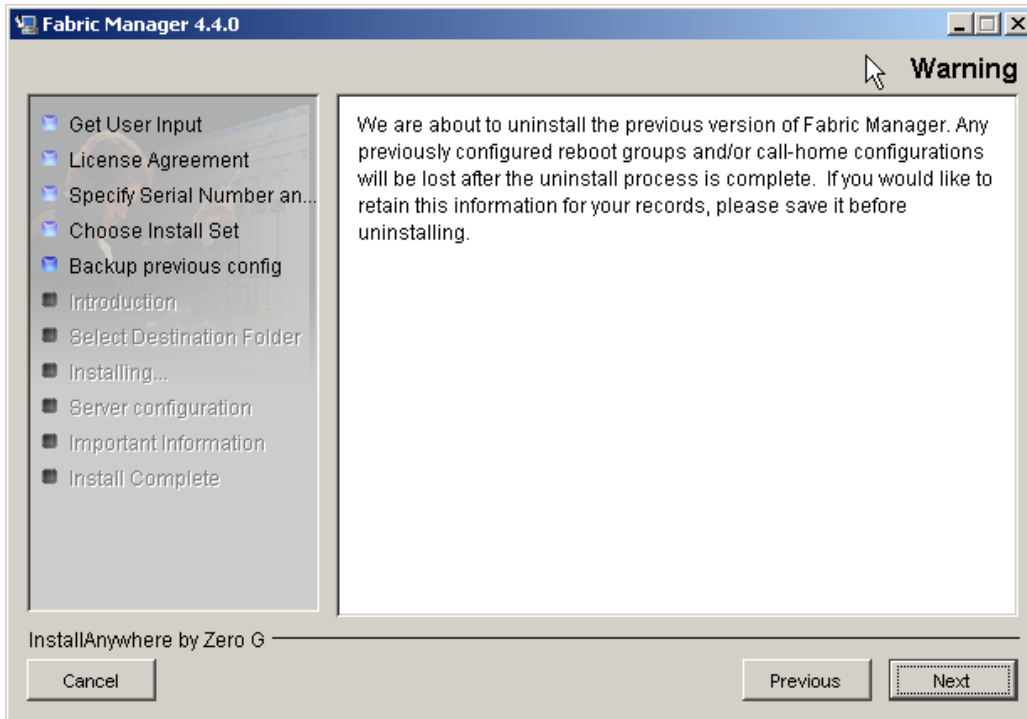


Figure 7 Uninstall warning

10. Click **Next**.

The Fabric Manager installer migrates the previous server configuration to the new server database, and the Introduction window appears (see [Figure 9](#) on page 30). Skip to [step 12](#).



NOTE: If you have a previous version of Fabric Manager client installed (earlier than v4.4.0), the Fabric Manager install wizard uninstalls the previous Fabric Manager client automatically.

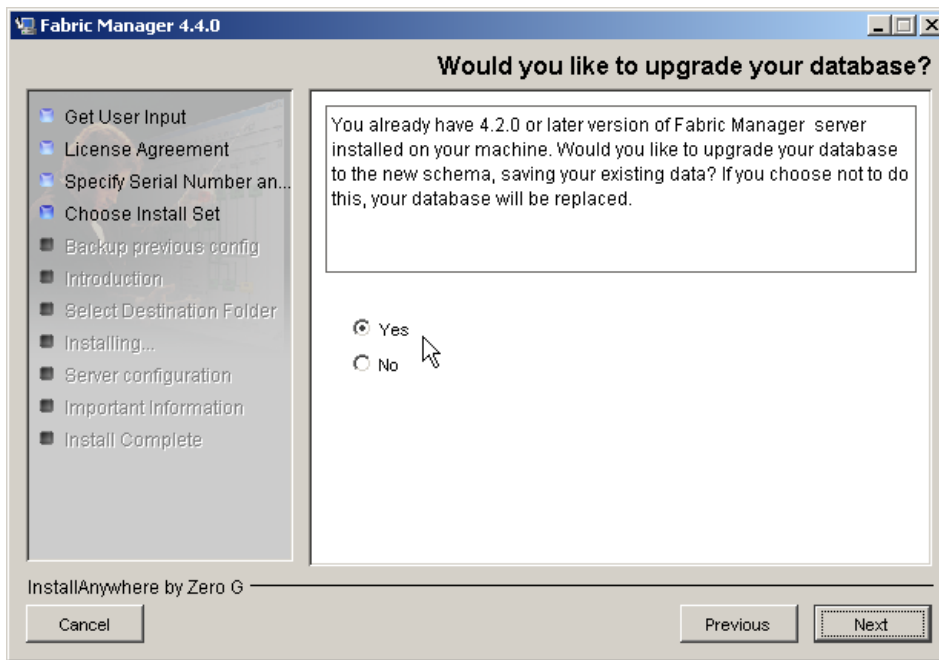


Figure 8 Option to upgrade existing database automatically

11. Click **Yes** if you want to update to the new database and automatically save your existing data, or click **No** to remove your current data and create the new database.

12. Click **Next**.

The Introduction window appears (see [Figure 9](#)).

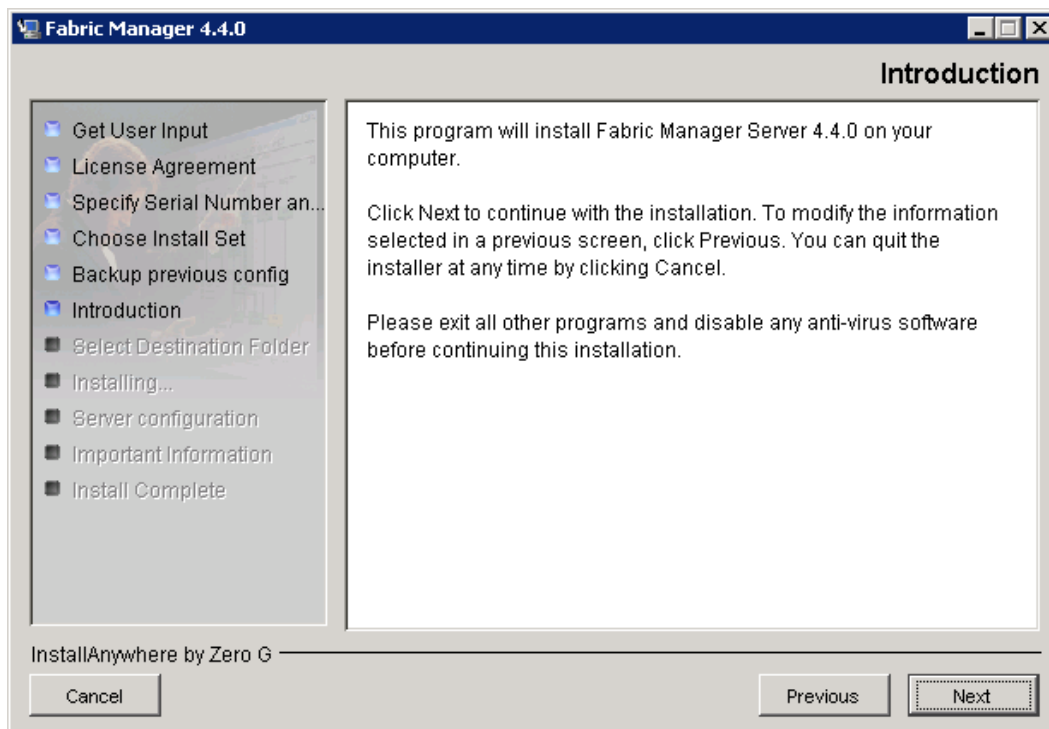


Figure 9 Installation introduction (server and client)

13. Read the introduction and click **Next**.

The Select Destination Folder window appears (see [Figure 10](#)). The default destination location is C:\Fabric Manager.

Optional: If you want to change the default location, click **Choose**. The Browse for folder window appears. Select a new location, and click **OK** in the Browse for folder window. You can also enter a new destination folder, but the path should not contain spaces.

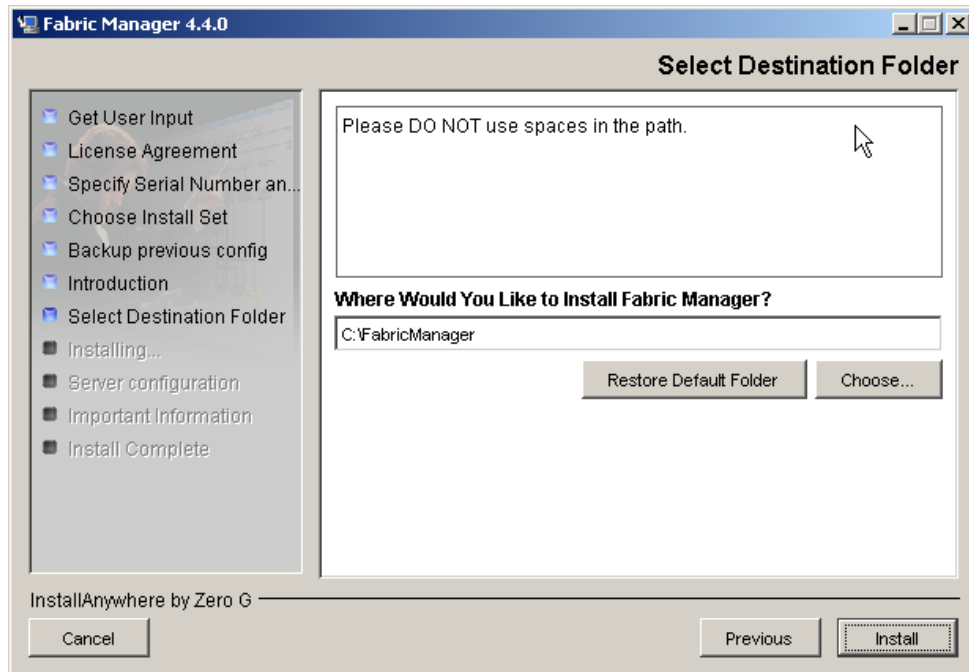


Figure 10 Select Destination Folder

14. Click **Install**.

You are advised to wait while Fabric Manager is installed on your machine.

The Please Specify Starting Port Number window appears (see [Figure 11](#)). The default starting port number is 24600. The port number you enter and the next five ports must be free ports. If the default starting port number is not a free port number, the server cannot start up correctly.

Optional: If you enter a new port number, you must ensure that all six ports (the port number you enter, and the next five ports) are free ports. Make a note of the port number that you enter. When you install clients to access this server, you must use the same port number during the client installation.



NOTE: If you are upgrading or migrating from a previous version of Fabric Manager, you may receive a message indicating that the ports are unavailable. This can occur when the ports have yet to be released by the previous uninstall. Wait a few minutes and try again.

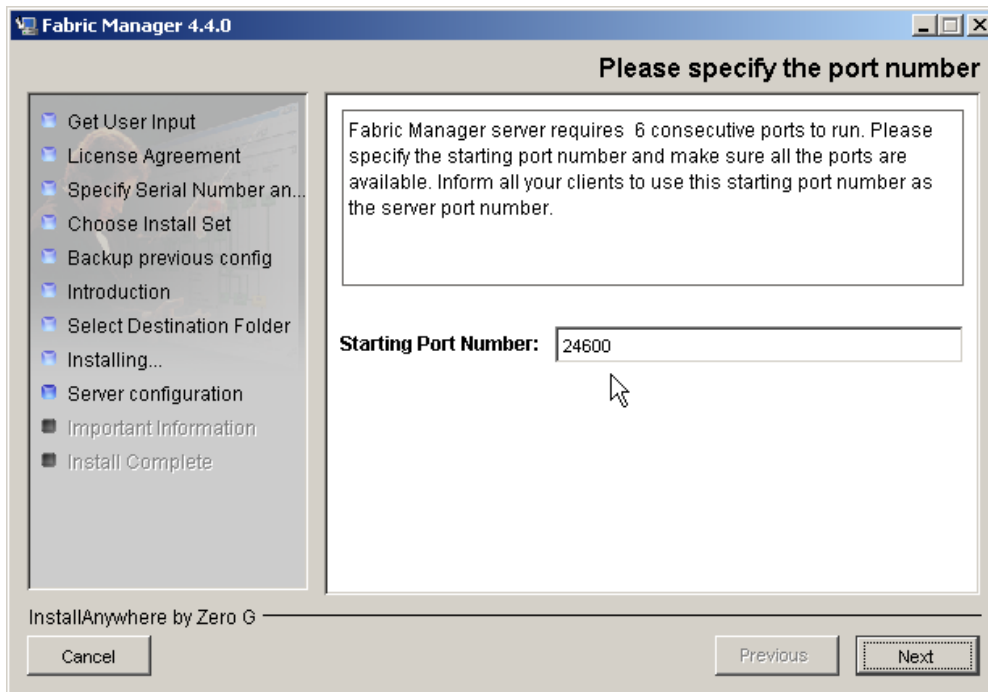


Figure 11 Port number used during installation

15. Click Next.

You are advised to wait while Fabric Manager configures your machine.

You are then advised to select an authentication method: either Windows domain or work group or Switch based authentication (see [Figure 12](#)).

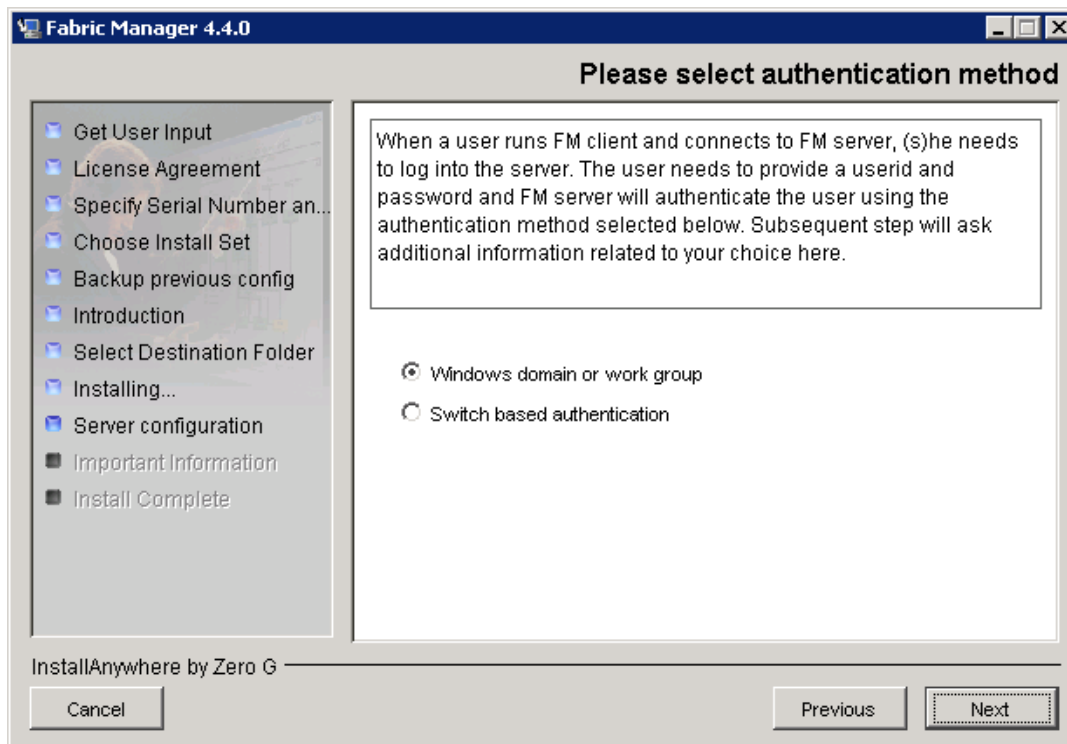


Figure 12 Select authentication method

16. Select **Windows domain or work group** and then click **Next** (see [Figure 13](#)) or select **Switch based authentication** and then click **Next** (see [Figure 14](#) on page 34) and skip to [step 18](#).

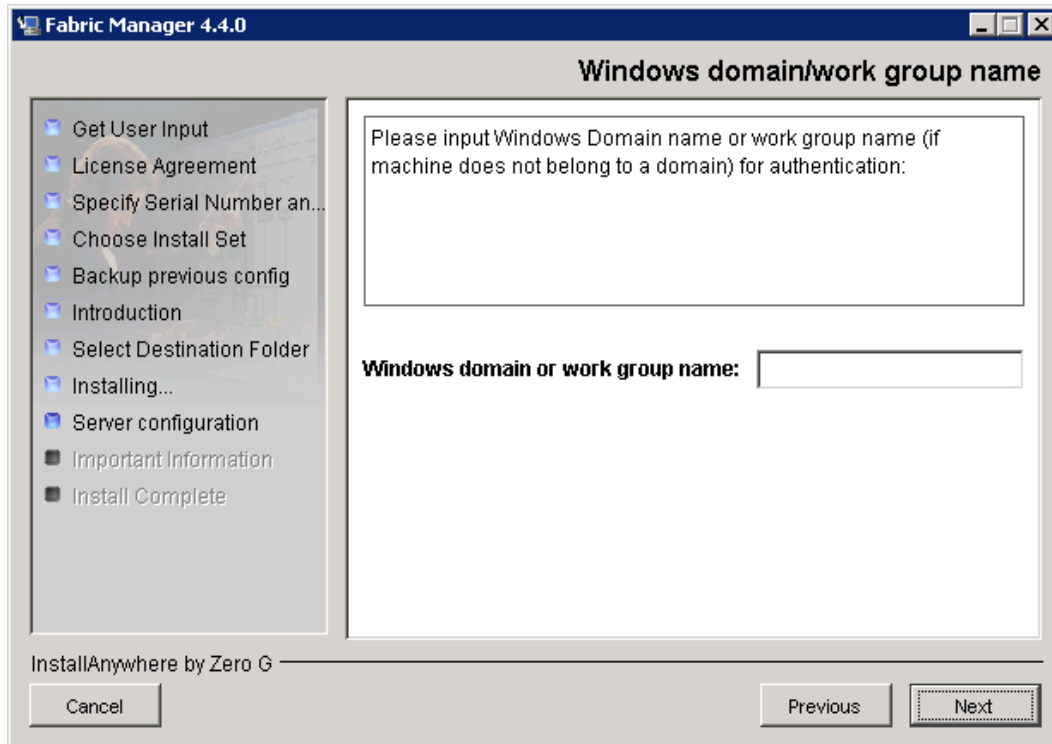


Figure 13 Enter windows domain/work group name

17. Enter the windows domain or work group name and then click **Next**.

The SAN size selection window appears (see [Figure 15](#) on page 34). Skip to [step 19](#).

If your machine is running Windows XP and it belongs to a local work group, but you want to authenticate the users locally (instead of using a Windows domain controller), you must perform the following Windows XP registry configuration:

- a. Set `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa\ForceGuest` to 0.
- b. Disable the guest account.
- c. Create a local user and use it to log in within Fabric Manager.

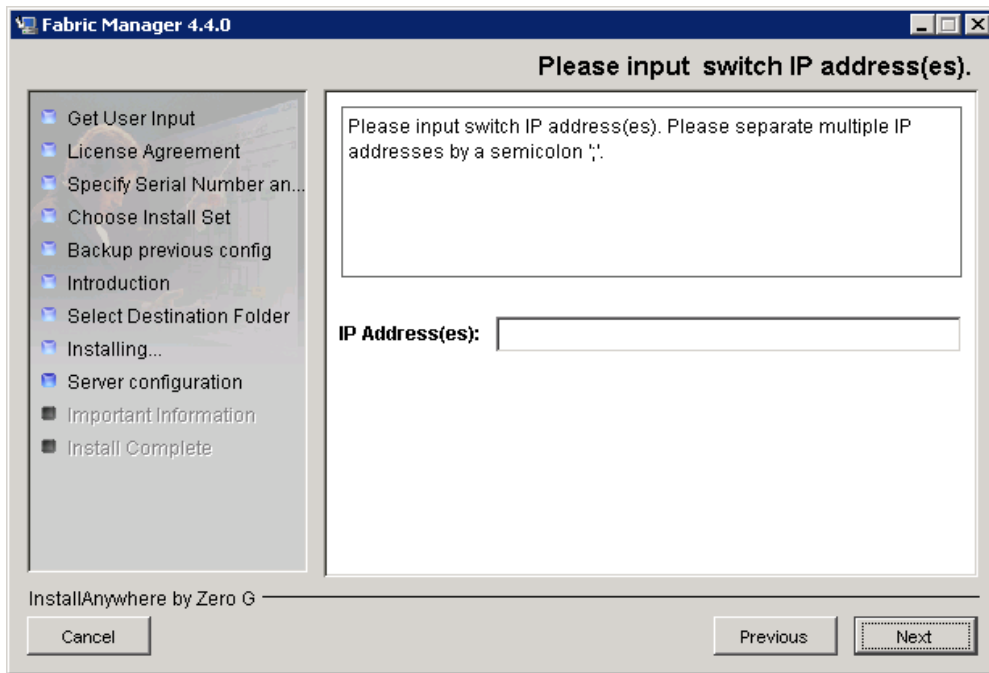


Figure 14 Enter IP addresses for switch-based authentication

18. Enter the IP addresses of the switches and then click **Next**.

The SAN size selection window appears (see [Figure 15](#)).

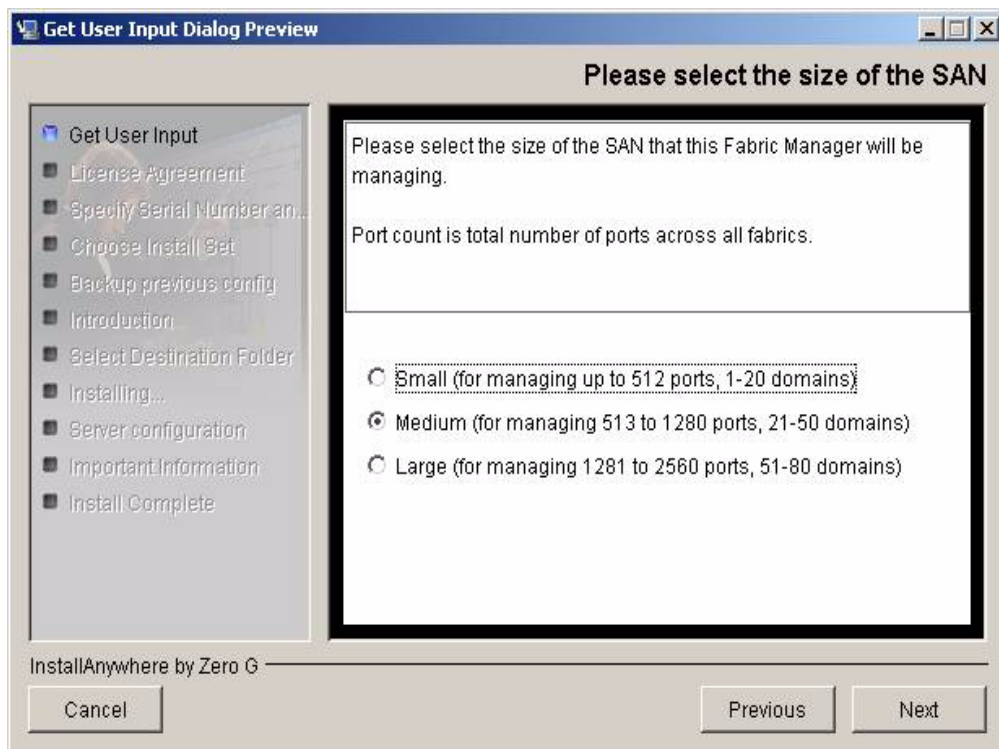


Figure 15 SAN size selection to determine polling rate

19. Select the size of the SAN that Fabric Manager will be managing (Table 6 provides a list of the polling rates for each SAN size).

Table 6 Polling rates per SAN size

Total ports managed	Polling rates	
	PM and APM	Fabric Manager updates
Small SAN (up to 512 ports, 1-20 domains)	5 minutes	1 minute
Medium SAN (513-1280** ports, 21-50 domains)	5 minutes*	5 minutes*
Large SAN (1281-2560 ports, 51-80 domains)	15 minutes***	5 minutes*
*SANs with more than 512 ports (medium and large SANs) can take between 5 and 10 minutes to update for some actions. You should issue a refresh manually for immediate updates. Refreshing a switch provides quicker updates (typically) than refreshing an entire fabric. **End-to-end monitoring is supported only on fabrics containing 1280 ports or fewer. ***Port performance monitoring data for large SANs is collected only in 15-minute intervals.		

20. Click **Next**.

The Important Information window appears (see Figure 16).

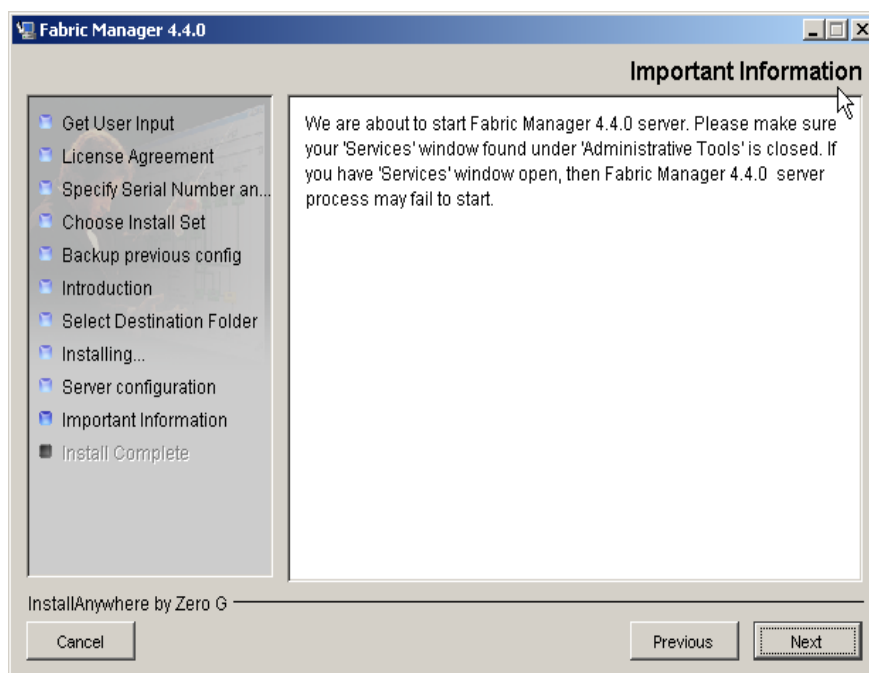


Figure 16 Important installation information

21. Read the information and then click **Next**.

You are advised to wait while Fabric Manager server is started (this may take a few minutes). After the Fabric Manager server is started, the Configure Client Options window appears (see Figure 17).

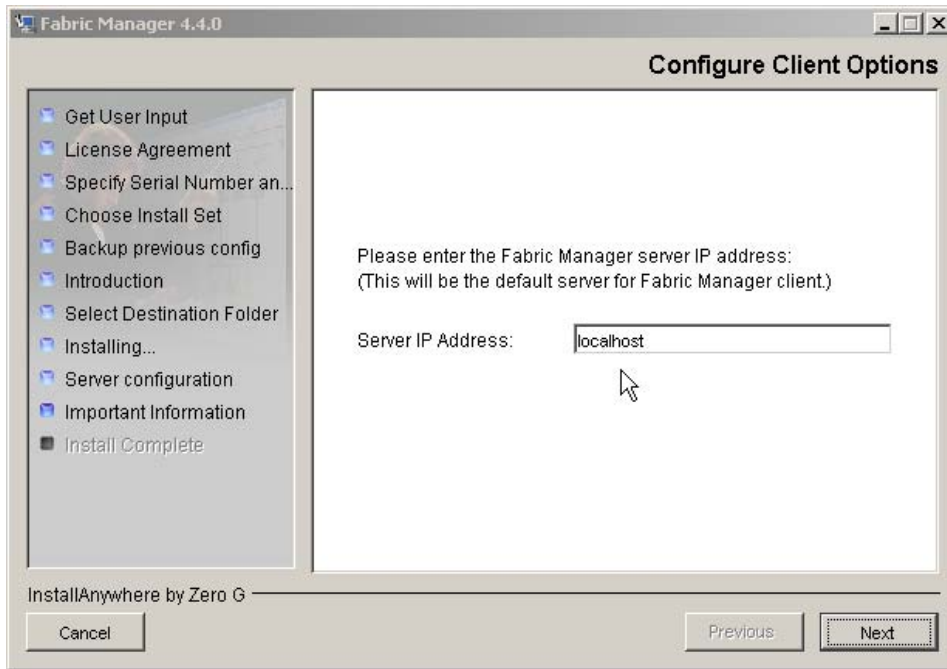


Figure 17 Configure client options

22. Enter the Fabric Manager server IP address. Valid formats consist of:

- No more than 67 characters, including .com, .net, and .org.
- Alphanumeric characters and hyphens only. Spaces and other characters are not allowed.
- No hyphens at the beginning or end.

If the server workstation is not a member of the specified domain, Fabric Manager authentication succeeds for any user credentials (if the guest account on the workstation is enabled). To ensure that the security of your Fabric Manager server is not compromised, your Windows guest user permissions must be disabled and your Fabric Manager server workstation must also be a member of the domain you specify.



NOTE: Refer to the Windows documentation you received with your workstation for instructions on disabling Windows Guest user permissions.

23. Click **Next**.

The Install Complete window appears (see [Figure 18](#)).

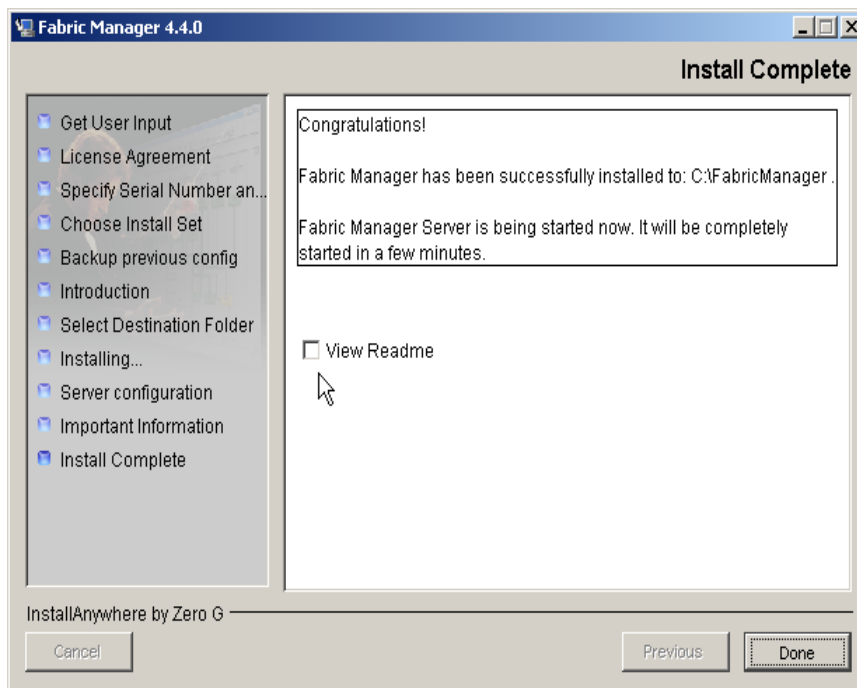


Figure 18 Install complete

24. Optional: Select the **View Readme** check box to open the ReadMe file after exiting the installation wizard.

25. Click **Done** to exit the install wizard.

Installing Fabric Manager client (for Windows)

To install the Fabric Manager client:

- 1.** Double-click the **Windows** folder from the Fabric Manager Installation CD-ROM.
- 2.** Double-click the **Install** icon.

If you have a previous licensed version of Fabric Manager client on your machine, the InstallAnywhere dialog box opens and the Choose Install Set window appears (see [Figure 3](#) on page 26). Skip to [step 6](#).

If you do not have a previous licensed version of Fabric Manager client on your machine (or have uninstalled it), or if you have the Evaluation version of Fabric Manager client, the InstallAnywhere dialog box opens and the Get User Input window appears (see [Figure 1](#) on page 25).

- 3.** Select the version you would like to install (**Full** or **Evaluation**) and then click **Next**.

A valid serial number and license key are required to install the Full version of Fabric Manager. You cannot continue installing the Full version without a valid serial number and license key. See ["Installing the evaluation version \(for Windows and Solaris\)"](#) on page 43 for additional information about using Fabric Manager for a 60-day trial period.

- 4.** Accept the license agreement for either the Full or Evaluation version.

If you are installing the Full version, the Specify Serial Number and License Key window appears (see [Figure 2](#) on page 26).

If you are installing the Evaluation version, the Choose Install Set window appears (see [Figure 3](#) on page 26). Skip to [step 6](#).

5. Enter a valid serial number and license key and then click **Next**.

Fabric Manager begins configuring your machine and then displays the Choose Install Set window (see [Figure 3](#) on page 26).



NOTE: The Fabric Manager client is automatically licensed for completeness (it is not a licensed client).

6. Click the **Client** icon and then click **Next**.

The Introduction window appears (see [Figure 19](#)).

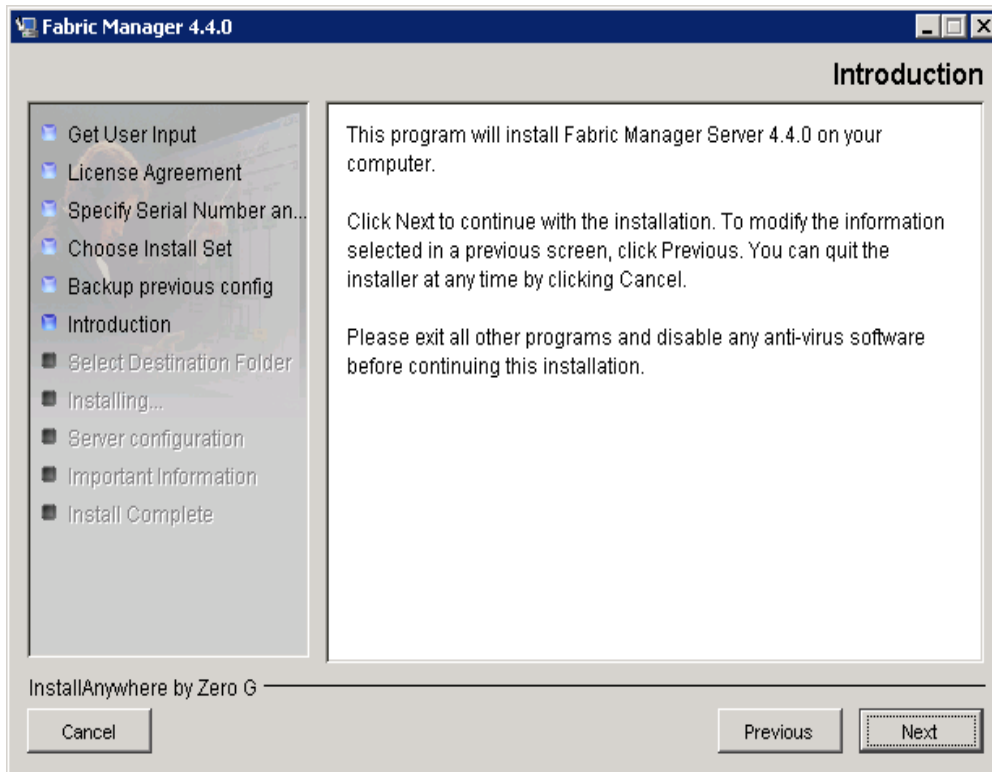


Figure 19 Installation introduction (client only)

7. Read the introduction and click **Next**.

The Select Destination Folder window appears (see [Figure 10](#) on page 31). The default destination location is *C:\Fabric Manager*.

Optional: If you want to change the default location, click **Choose**. The Browse for folder window appears. Select a new location, and click **OK** in the Browse for folder window. You can also enter a new destination folder, but the path should not contain spaces.

8. Click **Install**.

You are advised to wait while Fabric Manager is installed on your machine. The Configure Client Options window appears (see [Figure 20](#)).

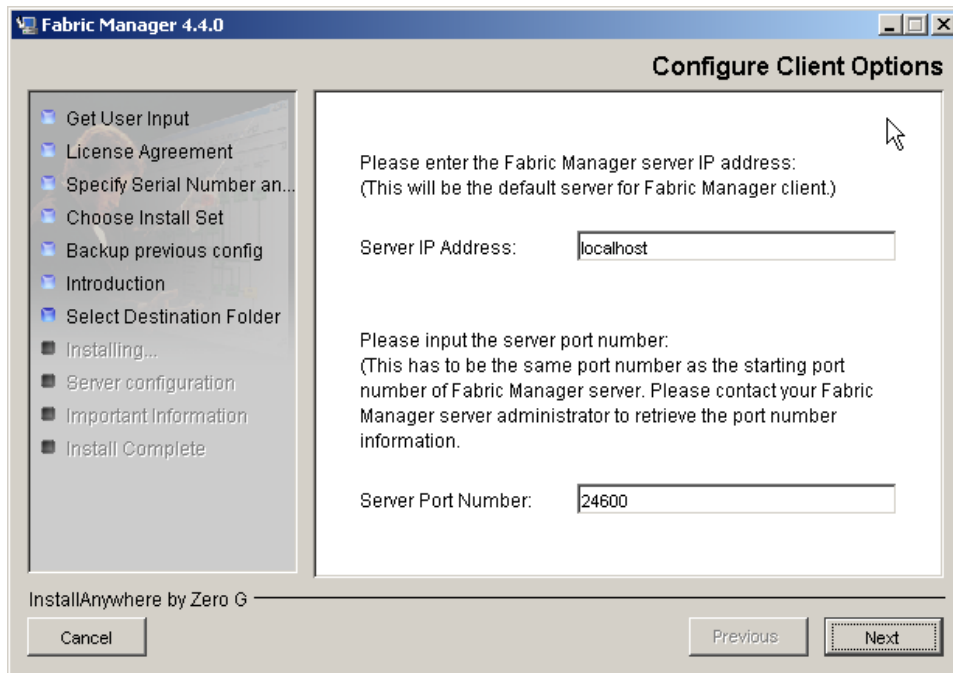


Figure 20 Configure Client Options

9. Enter your server IP address and a server port number. The server IP address you enter becomes the default server for the Fabric Manager client. The server port number must be the same port number as the starting port number of the Fabric Manager server.

10. Click **Next**.

The Install Complete window appears and the installation is complete (see [Figure 21](#)).

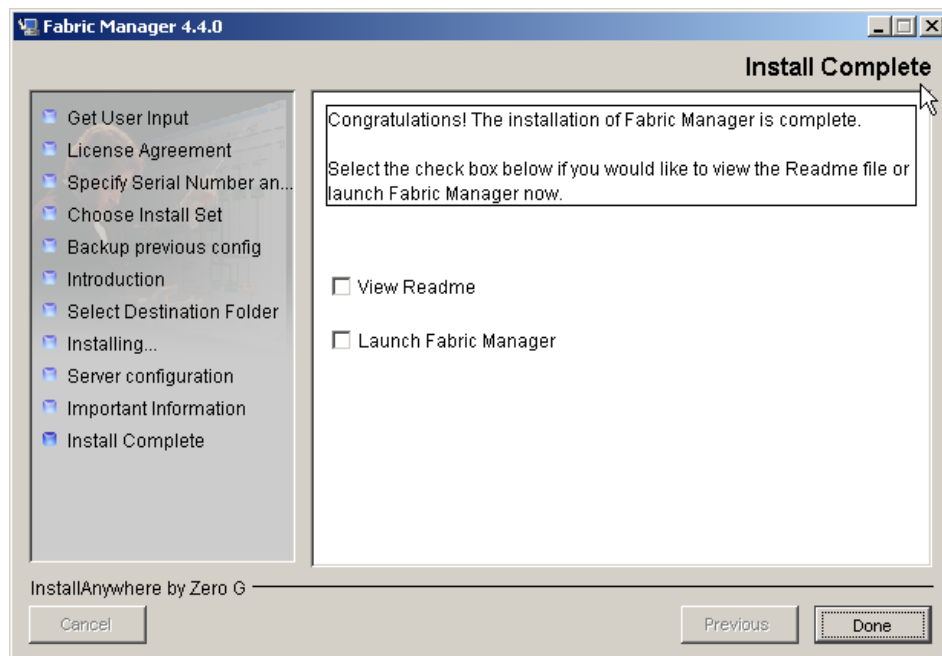


Figure 21 Installation Complete (client only)

11. Optional: You can click the **View Readme** check box to open the `Readme` file after exiting the installation wizard or you can click the **Launch Fabric Manager** check box to open Fabric Manager automatically after exiting the install wizard.
12. Click **Done** to exit the install wizard.



NOTE: The install wizard does not check to see if an existing path is already specified for the Fabric Manager client. The install wizard uses the system path file, which causes multiple paths. Fabric Manager functionality is not impeded by multiple paths, but the extra paths could hamper the ability of other applications to add additional path names, due to the length of the Fabric Manager client paths. If you see this problem, you should manually edit the system path to ensure it contains only one Fabric Manager client directory.

Installing Fabric Manager server (for Windows)

To install the Fabric Manager server:

1. Double-click the **Windows** folder from the Fabric Manager Installation CD-ROM.
2. Double-click the **Install** icon.

If you have a previous licensed version of Fabric Manager server already on your machine, the InstallAnywhere dialog box opens and the Choose Install Set window appears (see [Figure 1](#) on page 25). Skip to [step 6](#).

If you do not have a previous licensed version of Fabric Manager server already on your machine (or have uninstalled it), or if you have the Evaluation version of Fabric Manager server on your machine, the InstallAnywhere dialog box opens and the Get User Input window appears (see [Figure 1](#) on page 25).

3. Select the version you would like to install (**Full** or **Evaluation**) and then click **Next**.

A valid serial number and license key are required to install the Full version of Fabric Manager. You cannot continue installing the Full version without a valid serial number and license key. See ["Installing the evaluation version \(for Windows and Solaris\)"](#) on page 43 for additional information about installing the Evaluation version and using Fabric Manager for a 60-day trial period.

4. Accept the license agreement for either the Full or Evaluation version.

If you are installing the Full version, the Specify Serial Number and License Key window appears (see [Figure 2](#) on page 26).

If you are installing the Evaluation version, the Choose Install Set window appears (see [Figure 3](#) on page 26). Skip to [step 6](#).

5. Enter a valid serial number and license key and click **Next**.

Fabric Manager begins configuring your machine and displays the Choose Install Set window (see [Figure 3](#) on page 26).

6. Click the **Server** icon and then click **Next**.

If you already have an earlier version of Fabric Manager server installed (earlier than v4.2.0), a warning is displayed (see [Figure 4](#) on page 27). Make a copy of your database if you want to retain your existing configuration information and migrate it to the new version of Fabric Manager.

If you already have Fabric Manager v4.2.0 or later installed, the install wizard provides you the choice of migrating your existing database automaticall, or removing it (see [Figure 8](#) on page 30). Skip to [step 11](#).

If you do not currently have a version of Fabric Manager server installed, the Introduction window appears (see [Figure 9](#) on page 30). Skip to [step 12](#).

7. Click **Next**.

The Choose a Folder window appears (see [Figure 5](#) on page 28).

8. Select a backup folder where you want to back up the existing database and then click **Next**.

The Configuration to Import window appears (see [Figure 6](#) on page 28).

9. Select the configuration you want to back up (see [Figure 6](#) on page 28); then click **Next**.

The Fabric Manager installer migrates the previous server configuration to the new server database, and the Introduction window appears (see [Figure 9](#) on page 30). Skip to [step 12](#).



NOTE: If you have a previous version of Fabric Manager client installed (earlier than v4.4.0), the Fabric Manager install wizard uninstalls the previous Fabric Manager client automatically.

10. Click **Yes** if you want to update to the new database and automatically save your existing data, or click **No** to remove your current data and create the new database.

11. Click **Next**.

The Introduction window appears (see [Figure 22](#)).

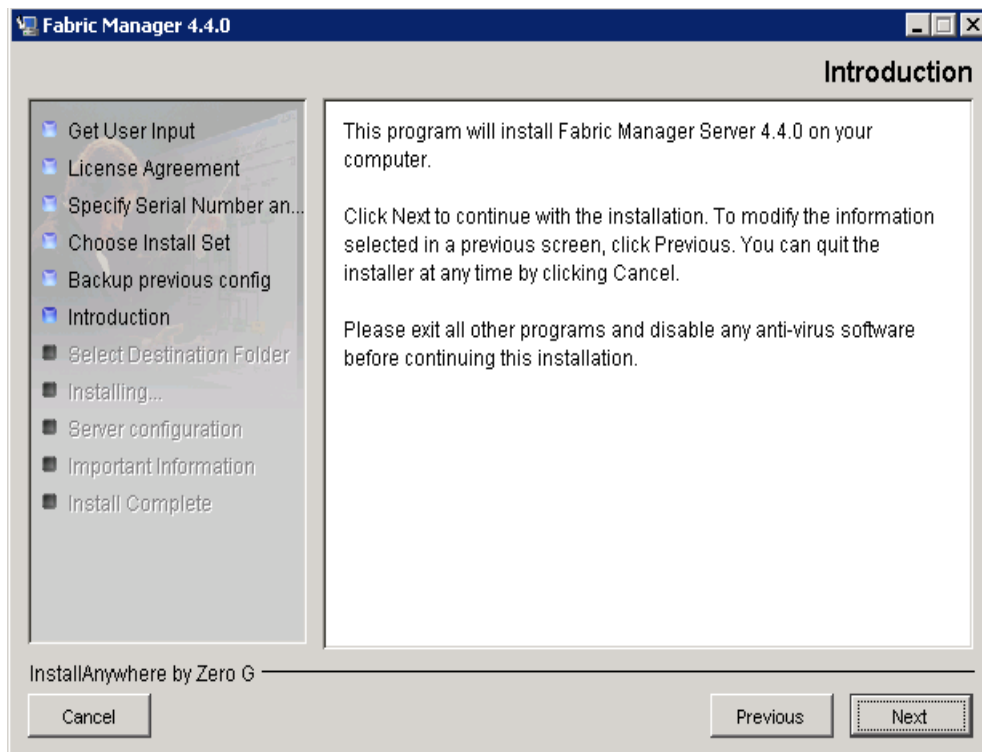


Figure 22 Installation instruction (server only)

12. Read the introduction and click **Next**.

The Select Destination Folder window appears (see [Figure 10](#) on page 31). The default destination location is C:\Fabric Manager.

Optional: If you want to change the default location, click **Choose**. The Browse for folder window appears. Select a new location and click OK in the Browse for folder window. You can also enter a new destination folder, but the path should not contain spaces.

13. Click **Install**.

You are advised to wait while Fabric Manager is installed on your machine.

The Please Specify Starting Port Number window appears (see [Figure 11](#) on page 32). The default starting port number is 24600. The port number you enter and the next five ports must be free ports. If the default starting port number is not a free port number, the server cannot start up correctly.

Optional: If you enter a new port number, you must ensure that all six ports (the port number you enter, and the next five ports) are free ports. Make a note of the port number you enter. When you install clients to access this server, you must use the same port number during the client installation.



NOTE: If you are upgrading/migrating from a previous version of Fabric Manager, you may receive a message indicating that the ports are unavailable. This can occur when the ports have yet to be released by the previous uninstall. Wait a few minutes and try again.

14. Click **Next**.

You are advised to wait while Fabric Manager configures your machine.

You are then advised to select an authentication method: either Windows domain or work group or Switch based authentication (see [Figure 12](#) on page 32).

15. Select **Windows domain or work group** and then click **Next** (see [Figure 13](#) on page 33) or select **Switch based authentication** and then click **Next** (see [Figure 14](#) on page 34) and skip to [step 17](#).

16. Enter the windows domain or work group name and then click **Next**.

The SAN Size Selection window appears (see [Figure 15](#) on page 34). Skip to [step 18](#).

17. Enter the IP addresses of the switches and then click **Next**.

The SAN size selection window appears (see [Figure 15](#) on page 34).

If your machine is running Windows XP and it belongs to a local work group, but you want to authenticate the users locally (instead of using a Windows domain controller), you must perform the following Windows XP registry configuration:

- a. Set `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa\ForceGuest` to 0.
- b. Disable the guest account.
- c. Create a local user and use it to login within Fabric Manager.

18. Select the size of the SAN that Fabric Manager will be managing (see [Table 6](#) on page 35 for a list of the polling rates for each SAN size).

19. Click **Next**.

The Important Information window appears (see [Figure 16](#) on page 35).

20. Read the information; then click **Next**.

The Install Complete window appears (see [Figure 18](#) on page 37).

21. Optional: You can click the **View ReadMe** check box to open the ReadMe file after exiting the installation wizard.

22. Click **Done** to exit the install wizard.

Installing the evaluation version (for Windows and Solaris)

HP offers an Evaluation version that you can use for up to 60 days. You do not need to provide a serial number or license key to use the Evaluation version; however, you must accept the license agreement displayed during the installation.

Each time you launch the Evaluation version of Fabric Manager, a warning message (see [Figure 23](#)) notifies you when the Evaluation version is to expire and gives you the option to register Fabric Manager (see ["Registering Fabric Manager"](#) on page 68) or to continue with the Evaluation version.

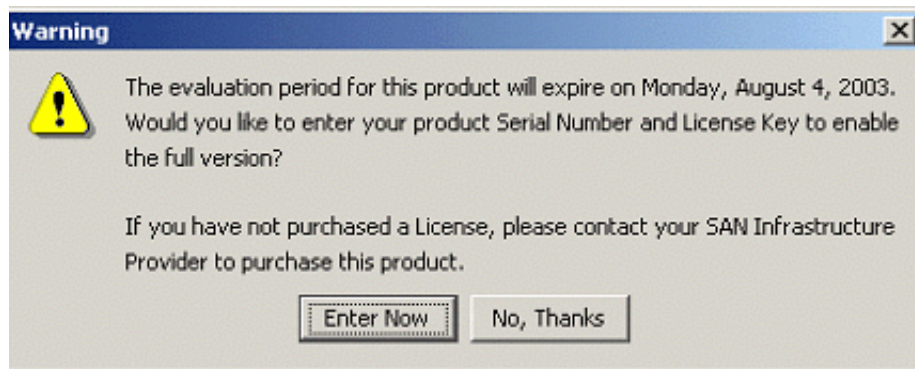


Figure 23 Evaluation version expiration warning

After 60 days, the Evaluation version expires and an error message is displayed the next time you launch Fabric Manager (see [Figure 24](#)).

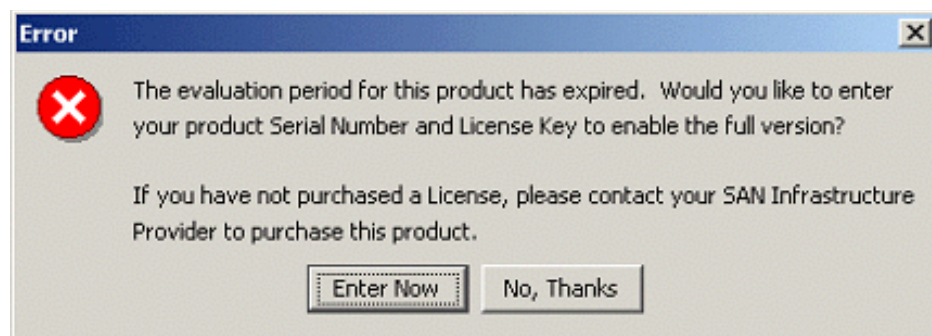


Figure 24 Evaluation version expiration notification

You have the option of registering the software to make it a Full version (licensed) or to discontinue use of Fabric Manager.

Any time before the 60 days expire, you can convert your Evaluation version to a Full version by registering Fabric Manager. You can register Fabric Manager in any of the following ways:

- Click **Enter Now** from the warning message that appears (see [Figure 23](#)) whenever you launch the *Evaluation* version of Fabric Manager. You will need to enter your serial number and license key.
- Click **Enter Now** from the error message that appears (see [Figure 24](#)) if you launch Fabric Manager after the 60-day evaluation period expires. You will need to enter your serial number and license key.
- Select REGISTER from the Help menu in Fabric Manager. For detailed instructions, see ["Registering Fabric Manager"](#) on page 68.

Installing Fabric Manager client and server (for Solaris)



NOTE: You must have root access to install the Fabric Manager server on a Solaris system. You do not have to have root access to install and run the Fabric Manager client.

1. Click **install.bin** from the File Manager window that appears when you insert the Fabric Manager Installation CD-ROM.
2. Double-click the **Install** icon.

The Get User Input window appears (see [Figure 1](#) on page 25).

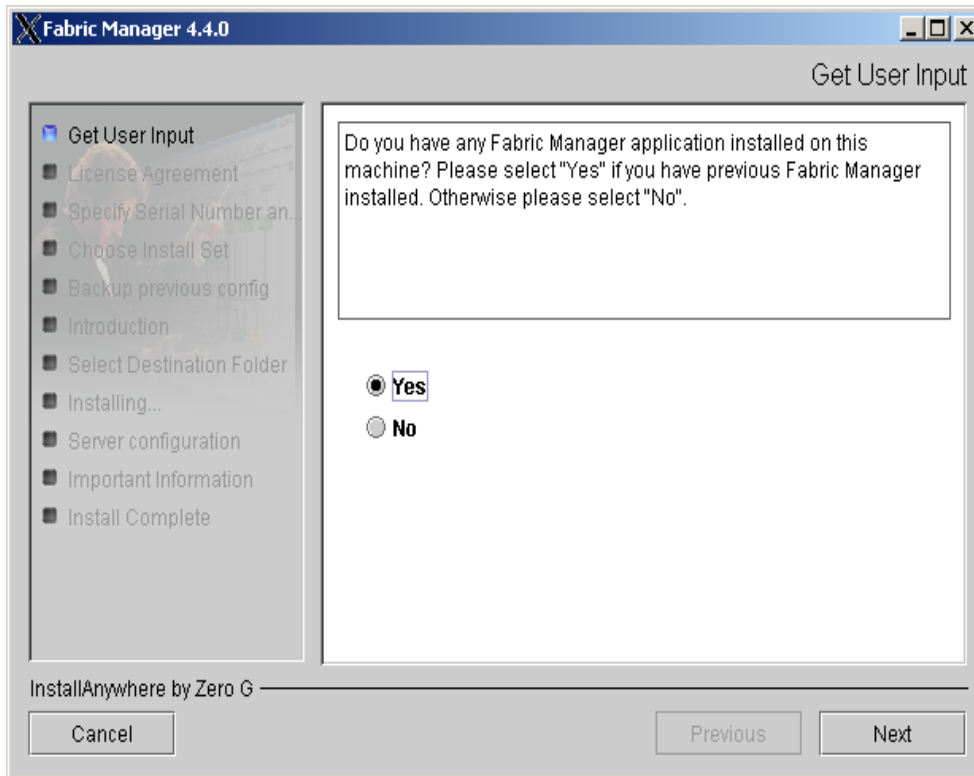


Figure 25 Previous version acknowledgement

3. Click **Yes** or **No**, as appropriate and then click **Next**.

If you selected Yes, you must acknowledge which components (client and server) you already have installed (see [Figure 26](#)).

If you selected No, you must choose the type of installation (Full or Evaluation) you want (see [Figure 31](#) on page 48). Skip to [step 9](#).

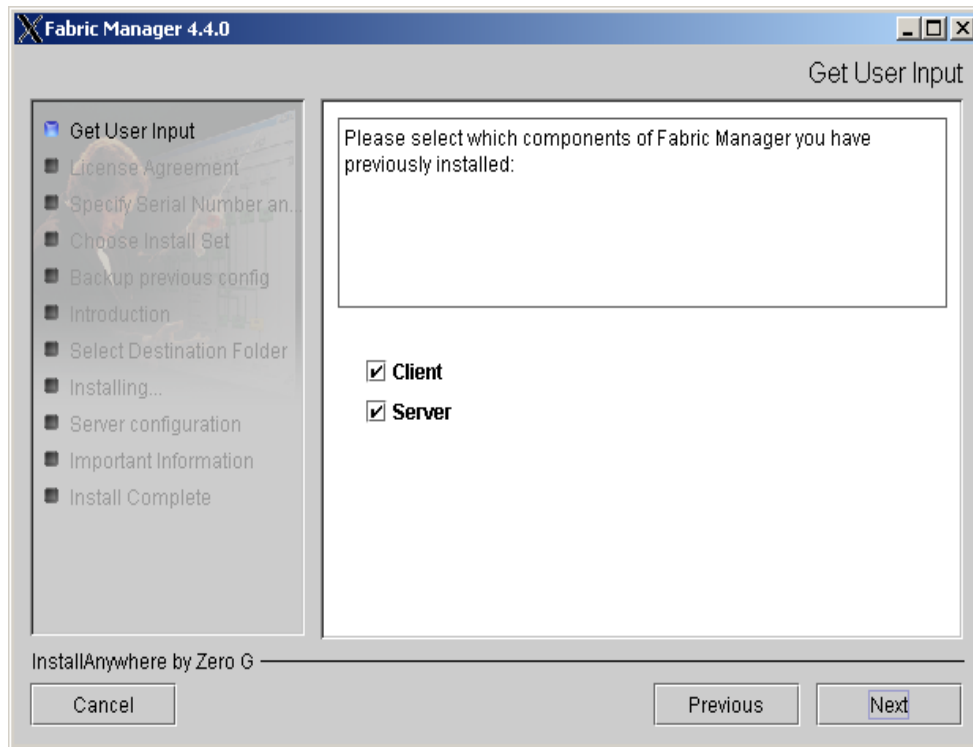


Figure 26 Previously installed components

4. Ensure that both **Client** and **Server** are selected and then click **Next**.

The Choose previous install Folder window (for the Fabric Manager client) appears (see [Figure 27](#)).

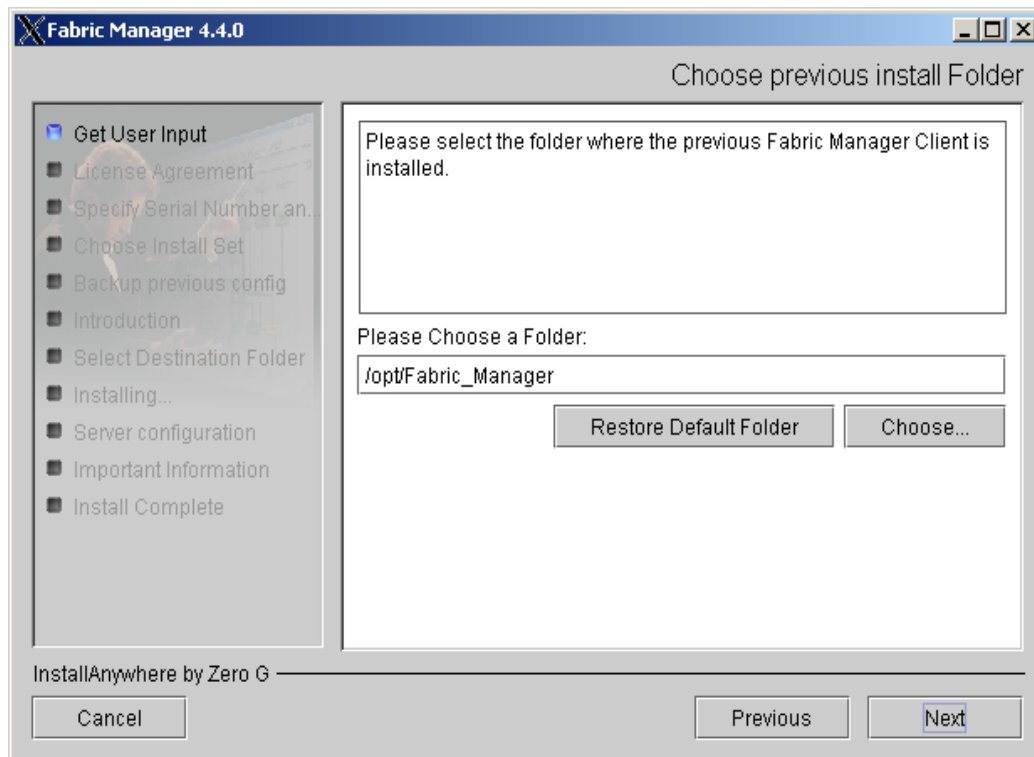


Figure 27 Choose previous install folder

5. Identify the location where the previous versions of Fabric Manager server and client are installed:

- If you have a version of Fabric Manager earlier than v4.2x installed, identify the location of the previous version and then click **Next**.

The Choose previous install Folder (for the Fabric Manager server) appears (see [Figure 28](#)).



NOTE: The client and server directories are not nested in Fabric Manager versions earlier than 4.2x.

- If you already have Fabric Manager installed (v4.2.0 or later), identify the location where the previous version of the Fabric Manager client is installed. The default value in the field may not be valid. The installer wants the location where the client is already installed. Select **Choose**.

The Select a Folder (for the Fabric Manager client) appears (see [Figure 30](#)). Skip to [step 8](#).

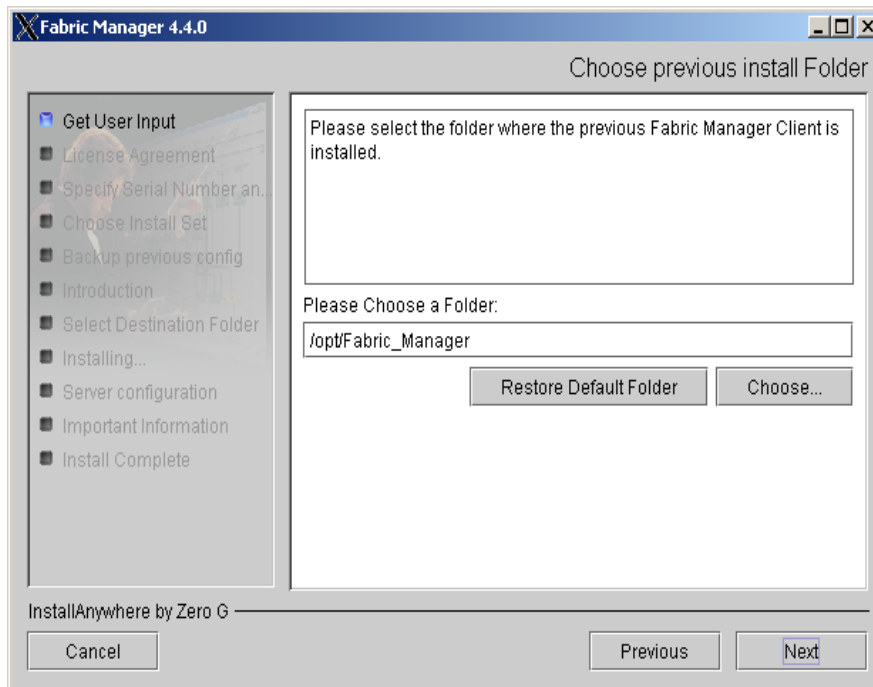


Figure 28 Select previous install folder (for client)

6. Click **Next**.

The Choose previous install Folder window (for the Fabric Manager server) appears (see [Figure 29](#)).

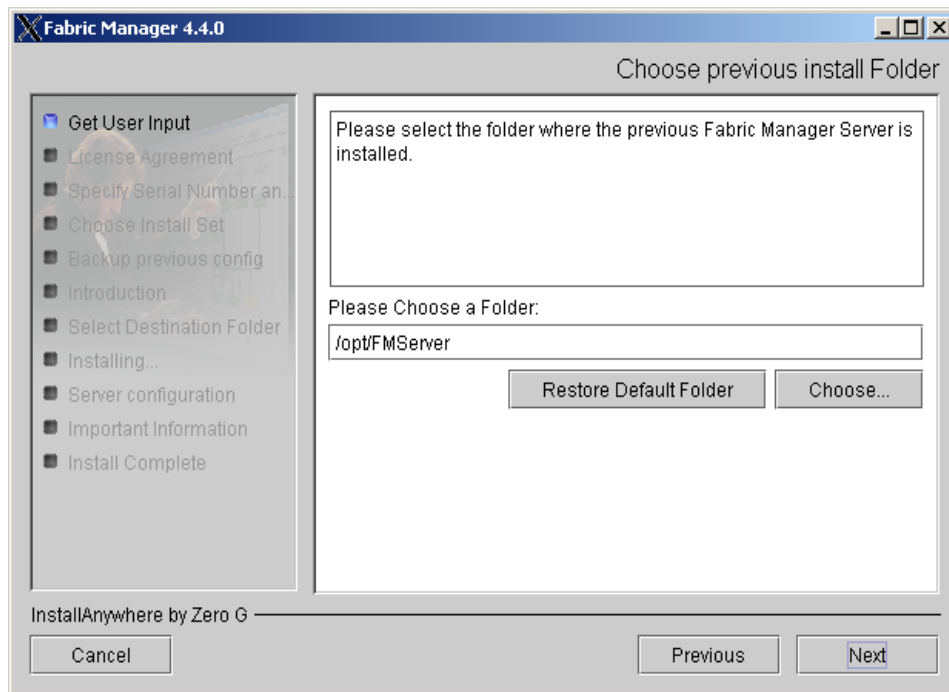


Figure 29 Choose previous install Folder (for server)

7. Click **Next**.

The Choose Install Set window appears (see [Figure 3](#) on page 26). Skip to [step 12](#).

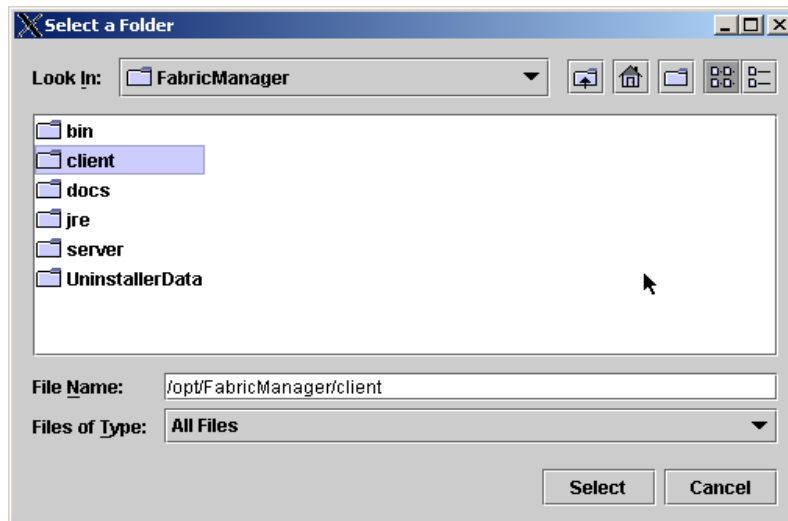


Figure 30 Select a folder (for client)

8. After entering the location of the client, enter the location of the server the same way.

When migrating the database from Fabric Manager 4.2 to 4.4, the installer is not asking for the base install Fabric Manager directory (for example, `/opt/FabricManager`), but the actual directory where the client and server are located.



CAUTION: If you enter the wrong values for the previous location, the migration of your data will be unsuccessful.

After you have identified the location of the previously installed client and server, the Choose Install Set window appears (see [Figure 3](#) on page 26). Skip to [step 12](#).

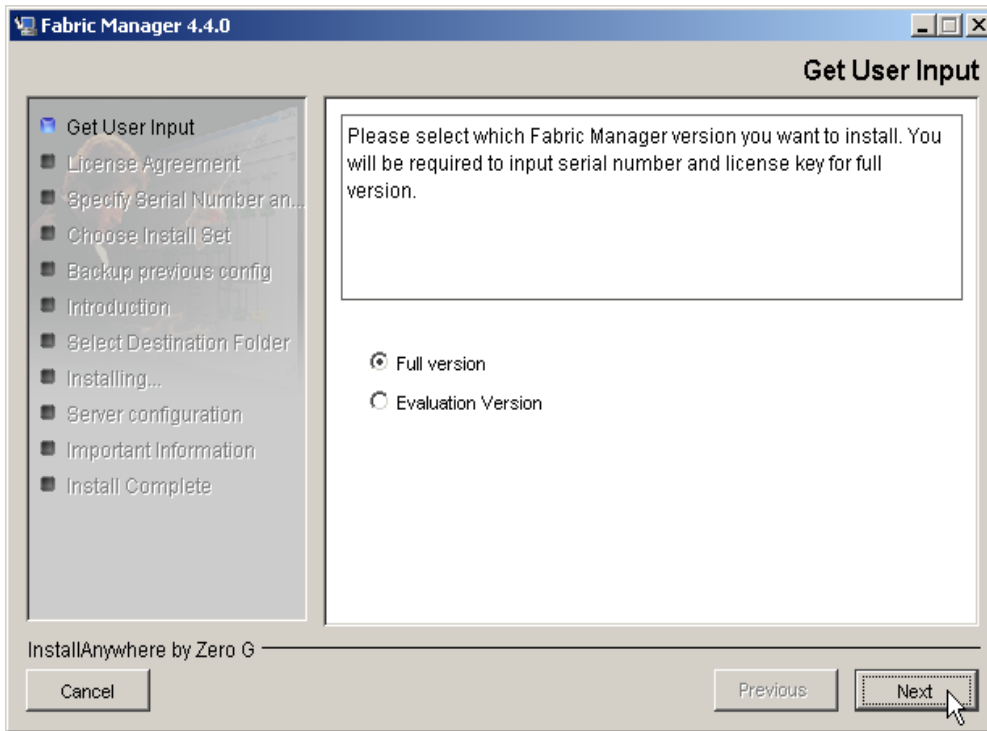


Figure 31 Select full or evaluation version for installation

9. Click the version you would like to install (**Full** or **Evaluation**) and then click **Next**.

A valid serial number and license key are required to install the Full version of Fabric Manager. You cannot continue installing the Full version without a valid serial number and license key. See ["Installing the evaluation version \(for Windows and Solaris\)"](#) on page 43 for information about installing it and using Fabric Manager for a 60-day trial period.

10. Accept the license agreement (for either the Full or Evaluation version).

If you are installing the Full version, the Specify Serial Number and License Key window appears (see [Figure 32](#)).

If you are installing the Evaluation version, the Choose Install Set window appears (see [Figure 3](#) on page 26). Skip to [step 12](#).

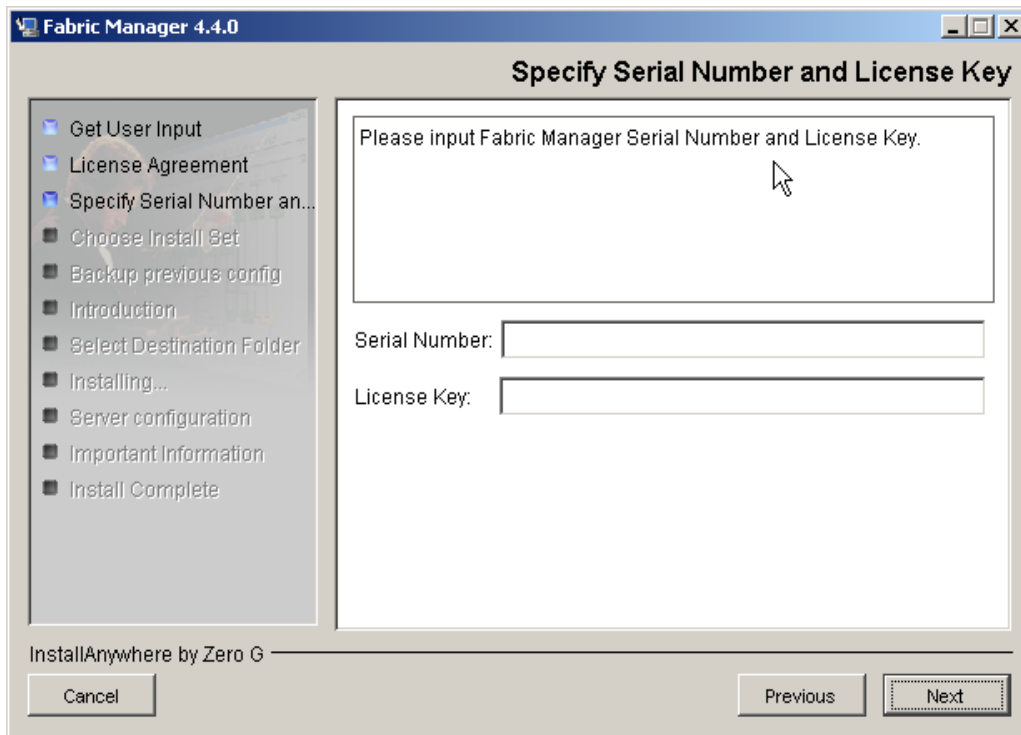


Figure 32 Specify serial number and license key dialog box

11. Enter a valid serial number and license key and then click **Next**.

Fabric Manager begins configuring your machine and displays the Choose Install Set window (see [Figure 33](#)).

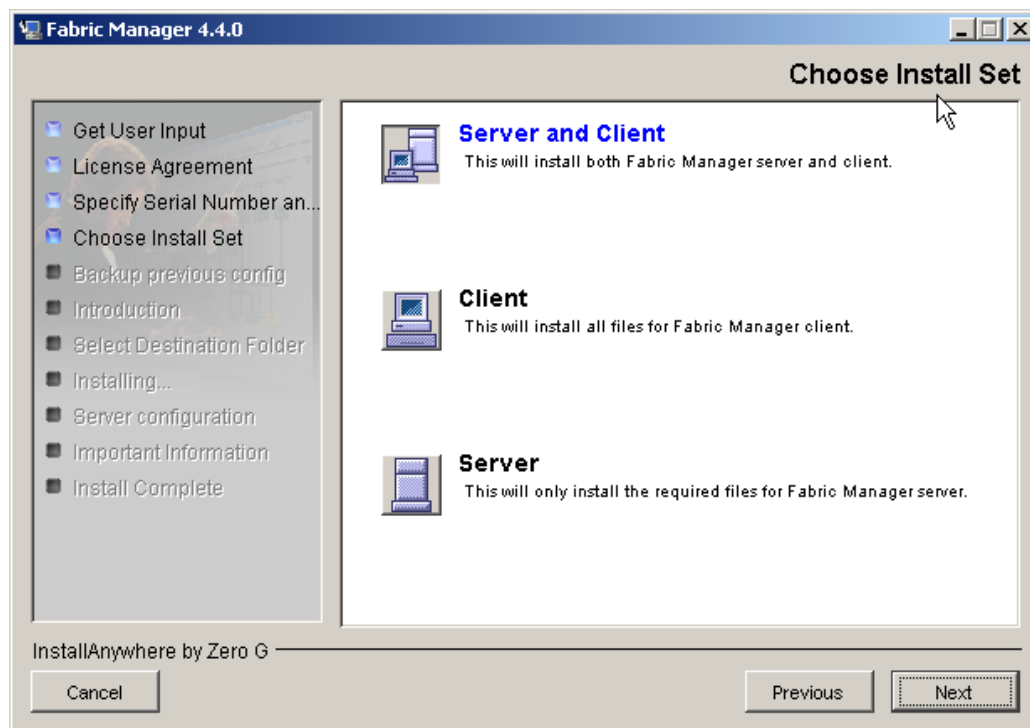


Figure 33 Choose Install Set (client, server, or server and client)

12. Click the **Server and Client** icon; then click **Next**.

If you already have an earlier version of Fabric Manager server installed (earlier than 4.2.0), a warning is displayed (see [Figure 34](#)). Make a copy of your database if you want to retain your existing configuration information and migrate it to the new version of Fabric Manager.

If you already have Fabric Manager v4.2.0 or later installed, the install wizard prompts you to migrate your existing database automatically or to remove it (see [Figure 38](#) on page 52). Skip to [step 17](#).

If you do not currently have a version of Fabric Manager server installed, the Introduction window appears (see [Figure 39](#) on page 53). Skip to [step 19](#).

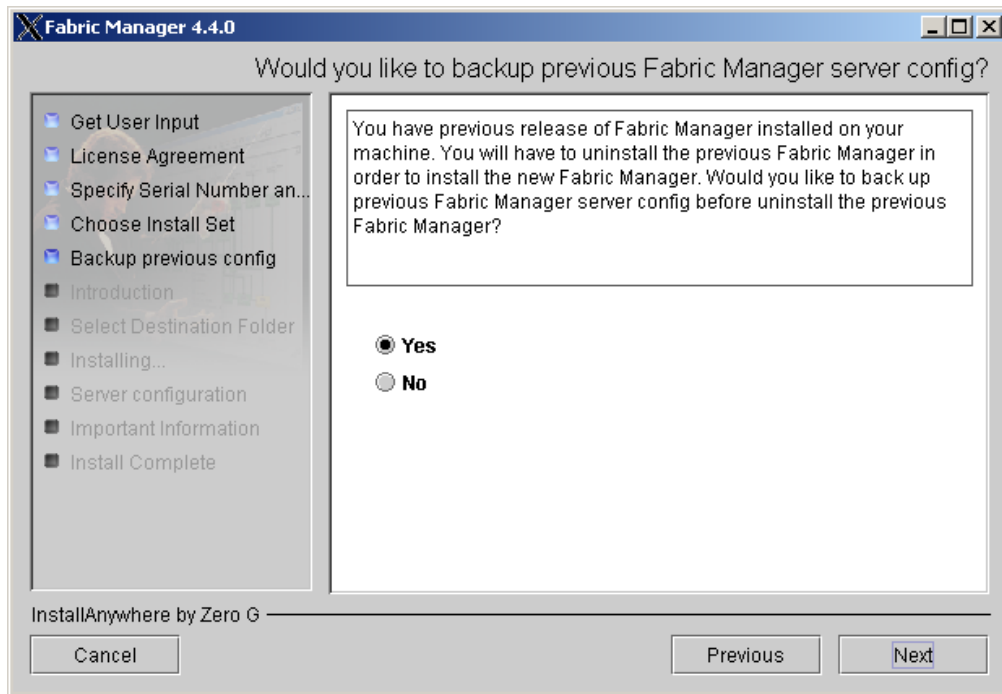


Figure 34 Notification to back up previous configuration

13. Click **Next**.

The Choose a Folder window appears (see [Figure 35](#)).

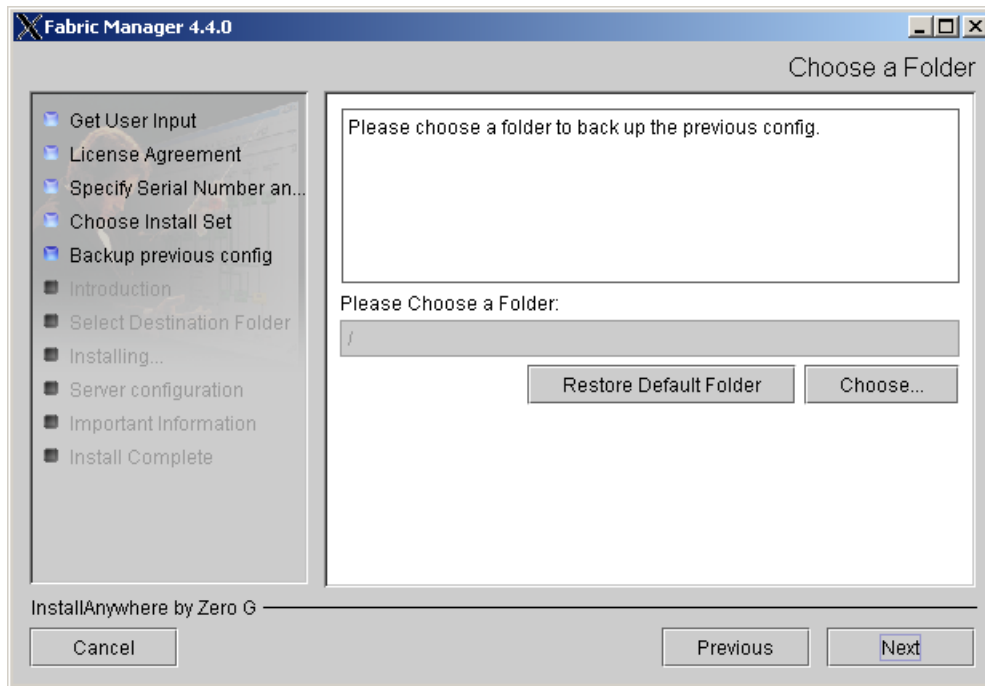


Figure 35 Choose folder to back up previous configuration

14. Select a folder to which you want to back up the existing database and then click **Next**.
The Configuration to Import window appears (see [Figure 36](#)).

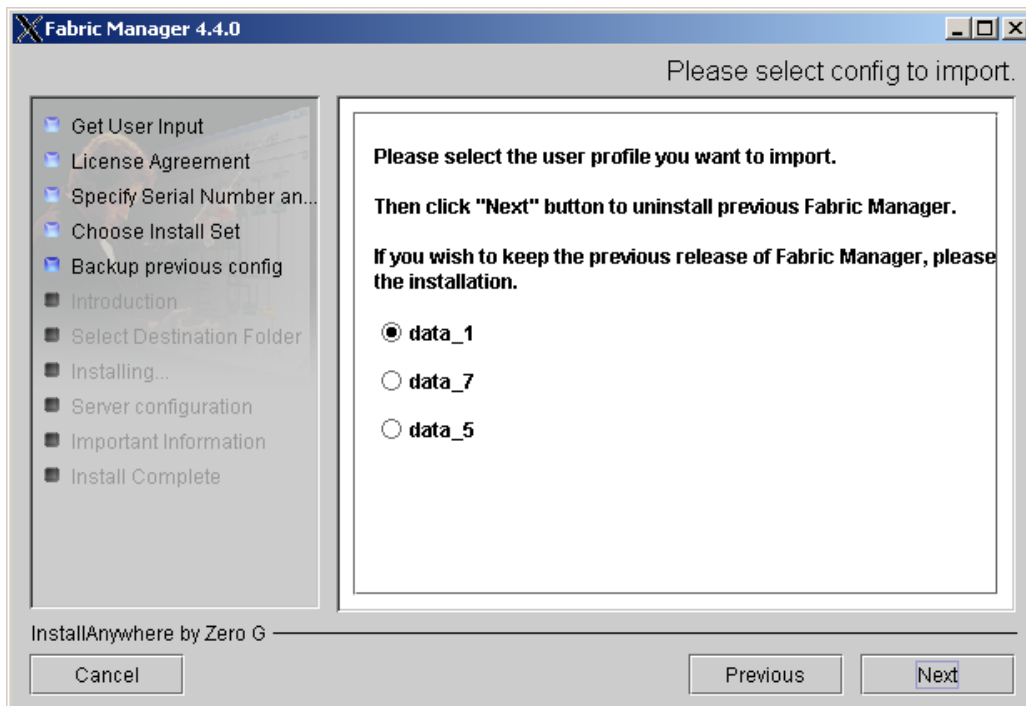


Figure 36 Select configuration to import

15. Select the configuration you want to import and then click **Next**.
An uninstall warning is displayed (see [Figure 37](#)).

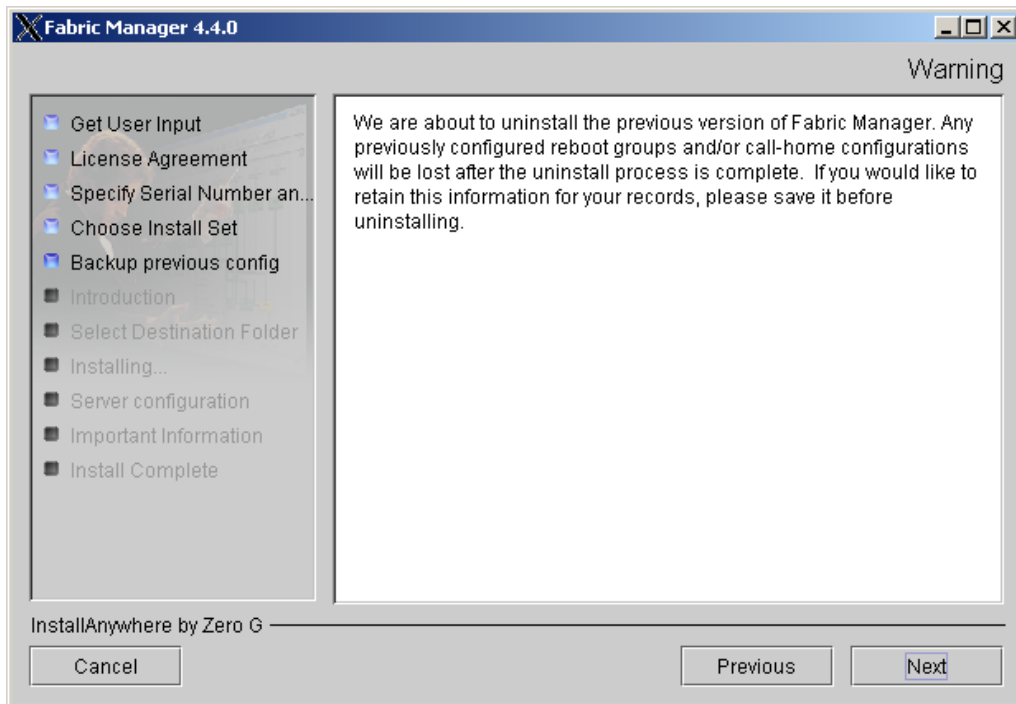


Figure 37 Uninstall warning

16. Click **Next**.

The Fabric Manager installer migrates the previous server configuration to the new server database, and the Introduction window appears (see [Figure 39](#)). Skip to [step 19](#).

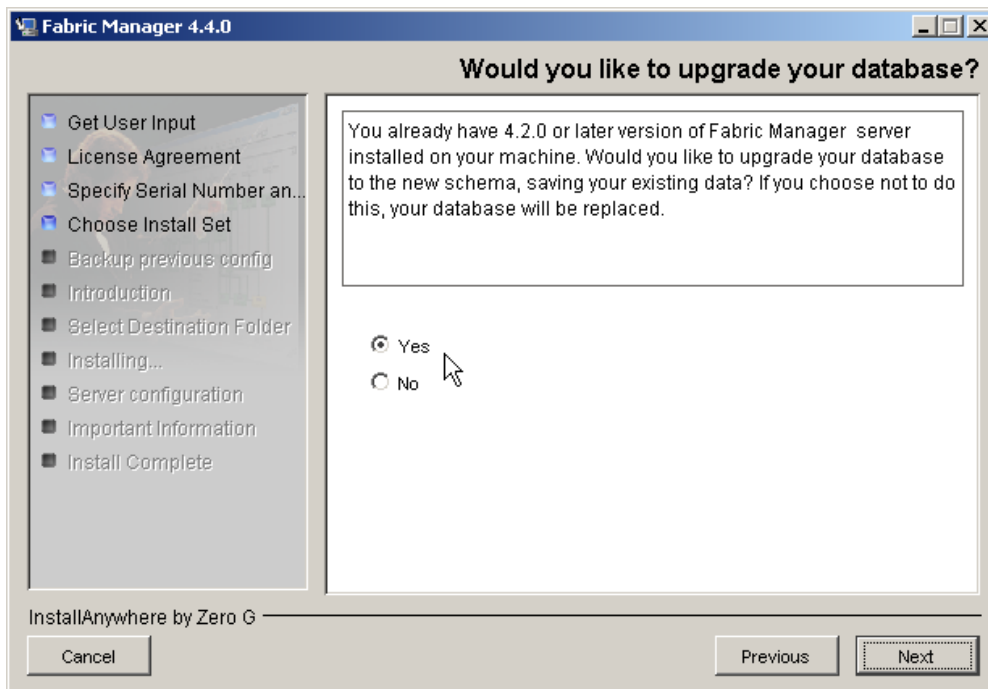


Figure 38 Option to upgrade existing database automatically

17. Select **Yes** if you want to update to the new database and automatically save your existing data, or select **No** to remove your current data and create the new database.

18. Click **Next**.

The Introduction window appears (see Figure 39).

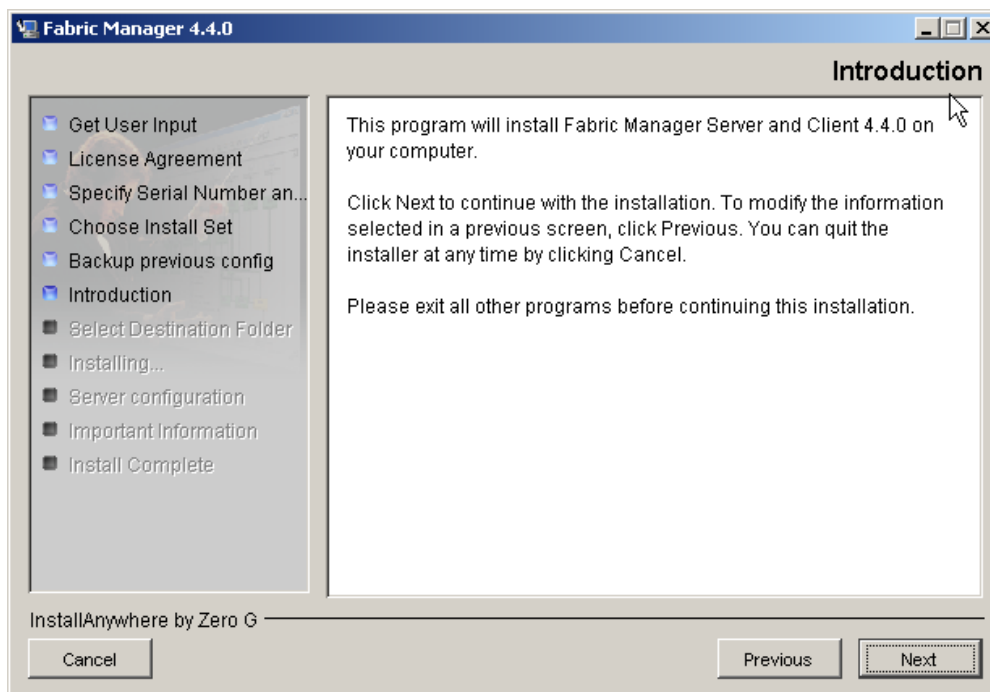


Figure 39 Installation introduction (server and client)

19. Read the introduction and click **Next**.

The Select Destination Folder window appears (see Figure 40).

Optional: If you want to change the default location, click **Choose**. The Browse for folder window appears. Select a new location and click **OK** in the Browse for folder window. You can also enter a new destination folder, but the path should not contain spaces. The folder name cannot exceed 59 characters.

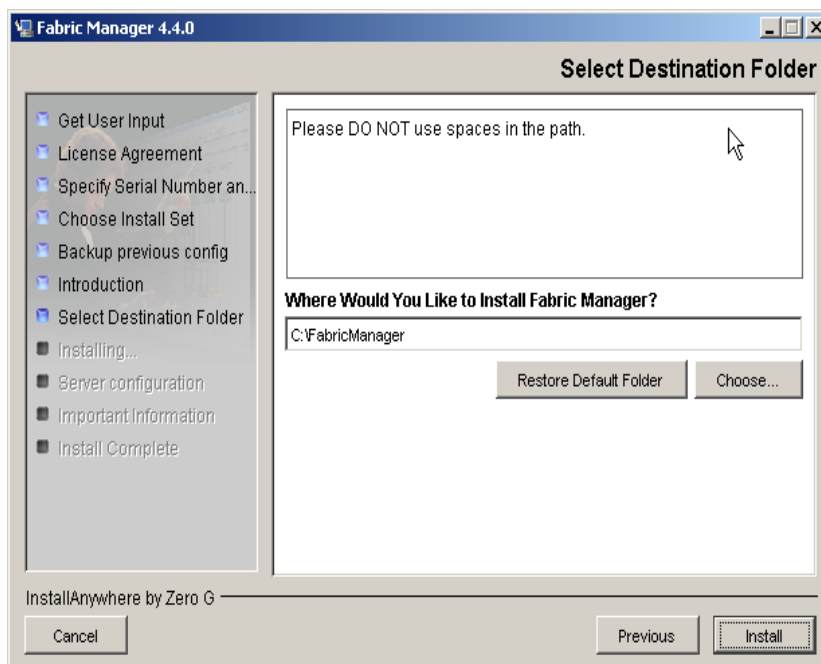


Figure 40 Select destination folder

20. Click **Install**.

You are advised to wait while Fabric Manager is installed on your machine.

The Please Specify Starting Port Number window appears (see [Figure 41](#)). The default starting port number is 24600. The port number you enter and the next five ports must be free ports. If the default starting port number is not a free port number, the server cannot start up correctly.

Optional: If you enter a new port number, you must ensure that all six ports (the port number you enter, and the next five ports) are free ports. Make a note of the port number that you enter. When you install clients to access this server, you must use the same port number during the client installation.



NOTE: If you are upgrading or migrating from a previous version of Fabric Manager, you may receive a message indicating the ports are unavailable. This can occur when the ports have yet to be released by the previous uninstall. Wait a few minutes and try again.

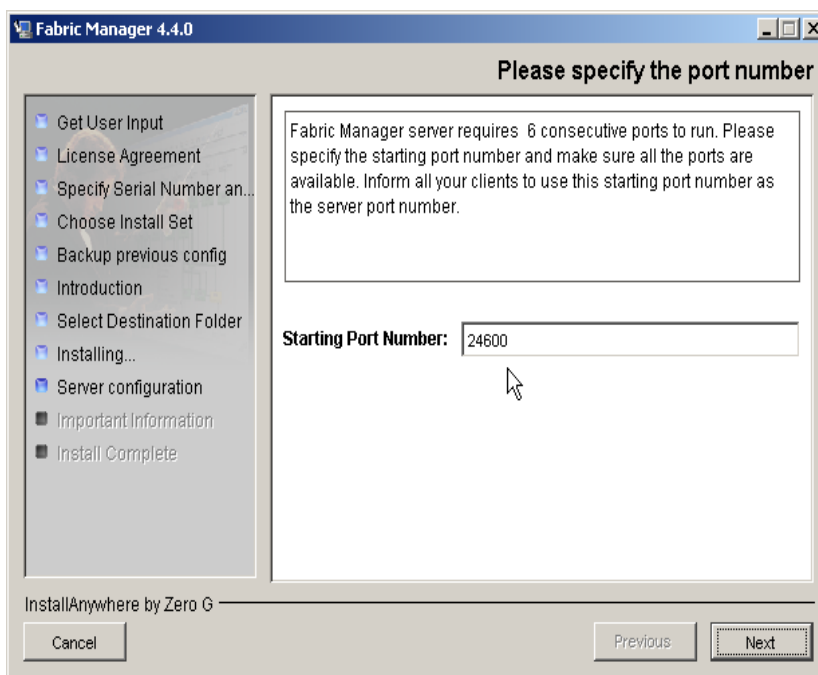


Figure 41 Port number used during installation

21. Click **Next**.

You are advised to wait while Fabric Manager configures your machine. You are then advised to select an authentication method: NIS authentication, switch-based authentication, or password file authentication.

22. Select one and then click **Next**.

23. If you selected NIS authentication, enter your NIS hostname/IP address and NIS domain name. You can omit the NIS domain name to force the Fabric Manager server to use broadcast to locate a valid NIS server or NIS slave.

If you selected switch-based authentication, enter the IP addresses of the switches and then click **Next**.

If you selected password file authentication, click **Next** without entering any information.

The SAN size window appears (see [Figure 42](#)).

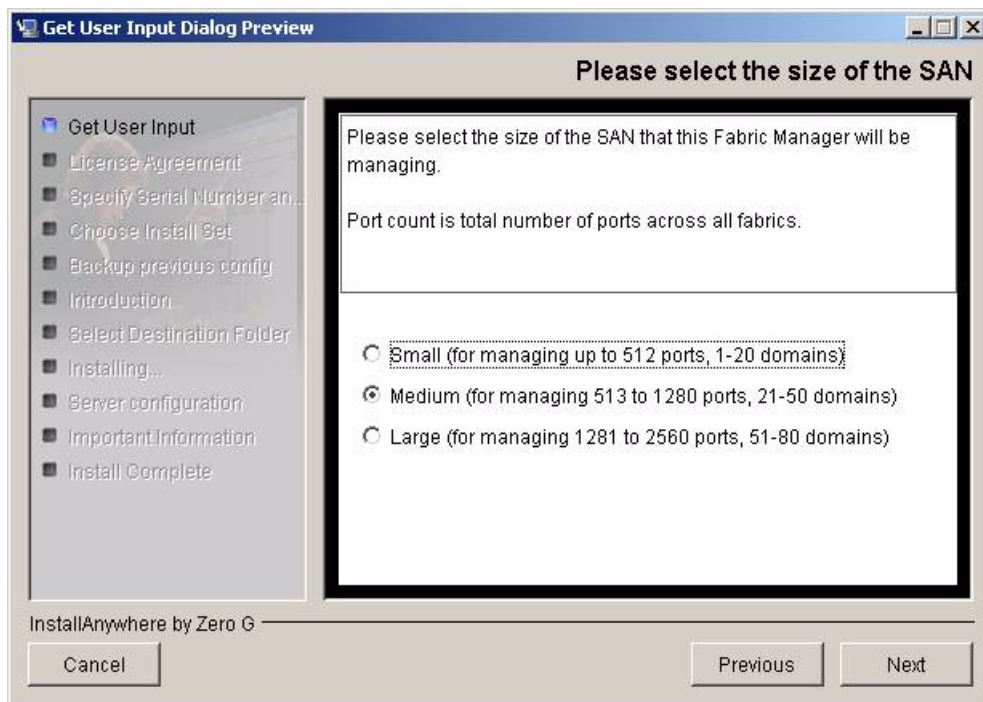


Figure 42 SAN size selection to determine polling rate

24. Select the size of the SAN that Fabric Manager will be managing (see [Table 6](#) on page 35 for a list of the polling rates for each SAN size).

25. Click **Next**.

You are advised to wait while Fabric Manager server is started (this may take a few minutes). After the Fabric Manager server is started, the Configure Client Options window appears (see [Figure 43](#)).

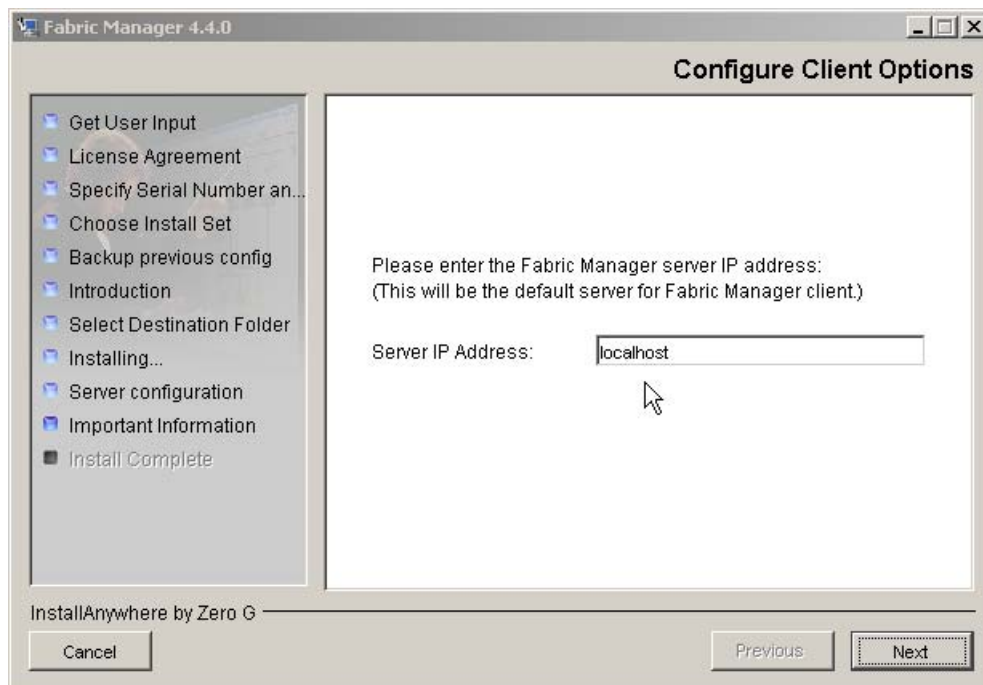


Figure 43 Configure client options

26. Enter your NIS host name or IP address and domain name for Fabric Manager server user authentication. Valid formats consist of:
- No more than 67 characters, including .com, .net, and .org.
 - Alphanumeric characters and hyphens only. Spaces and other characters are not allowed.
 - No hyphens at the beginning or end.

If you do not specify an NIS server host name or IP address, and no NIS server exists on the same subnet as the Fabric Manager server, all authentication requests to that server fail.

27. Click **Next**.

The Install Complete window appears (see [Figure 44](#)).

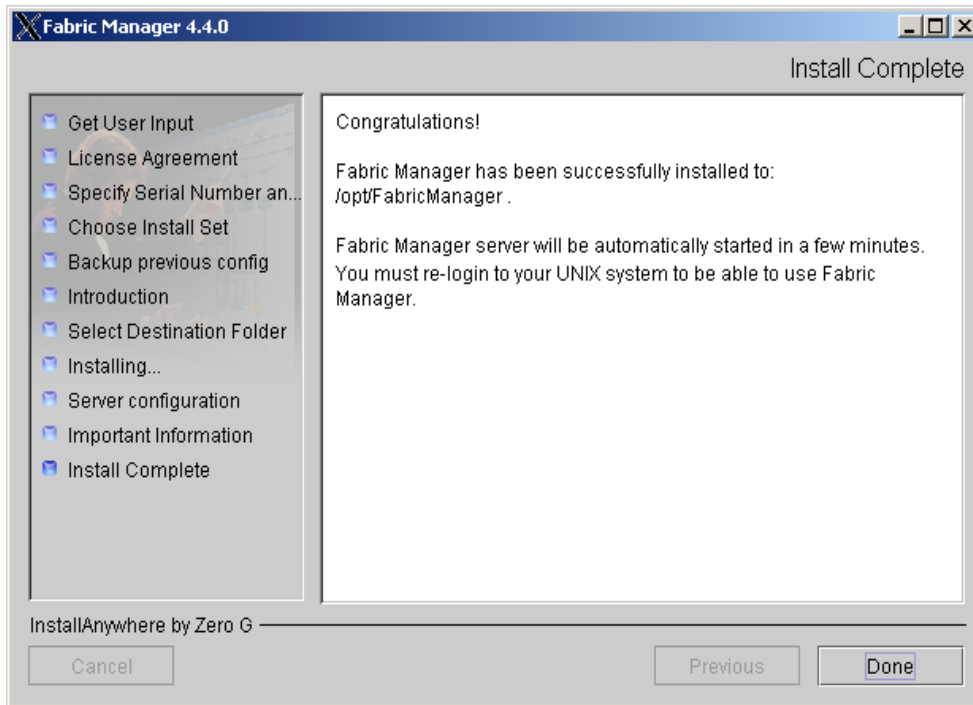


Figure 44 Install complete

28. Click **Done** to exit the install wizard.

Installing Fabric Manager client (for Solaris)

To install the Fabric Manager client:

1. Click **install.bin** from the File Manager window that appears when you insert the Fabric Manager Installation CD-ROM.
2. Double-click the **Install** icon.
The Get User Input window appears (see [Figure 1](#) on page 25).
3. Select **No** and then click **Next**.

If you selected No, you must choose the type of installation (Full or Evaluation) you want (see [Figure 31](#) on page 48).

4. Click the version you would like to install (**Full** or **Evaluation**) and then click **Next**.

A valid serial number and license key are required to install the Full version of Fabric Manager. You cannot continue installing the Full version without a valid serial number and license key. See ["Installing the evaluation version \(for Windows and Solaris\)"](#) on page 43 for more information about installing it and using Fabric Manager for a 60-day trial period.

5. Accept the license agreement (for either the Full or Evaluation version).

If you are installing the Full version, the Specify Serial Number and License Key window appears (see [Figure 45](#)).

If you are installing the Evaluation version, the Choose Install Set window appears (see [Figure 46](#) on page 58). Skip to [step 7](#).

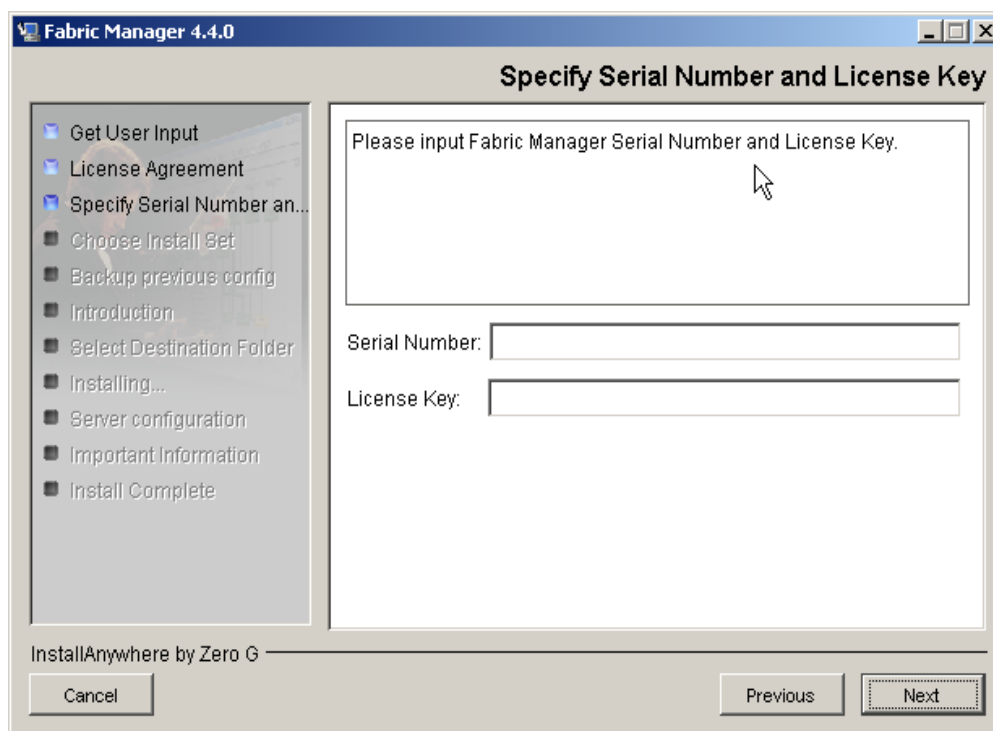


Figure 45 Specify serial number and license key

6. Enter a valid serial number and license key and then click **Next**.

Fabric Manager begins configuring your machine and displays the Choose Install Set window (see [Figure 46](#)).

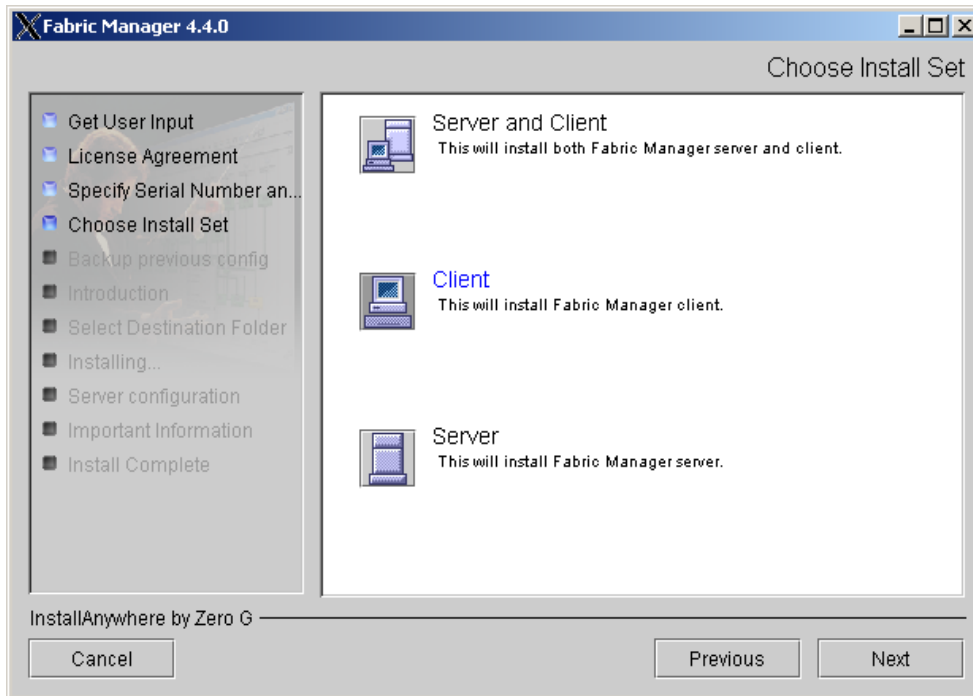


Figure 46 Choose install set (client)

7. Select the **Client** icon and then click **Next**.

The Introduction window appears (see [Figure 47](#)).

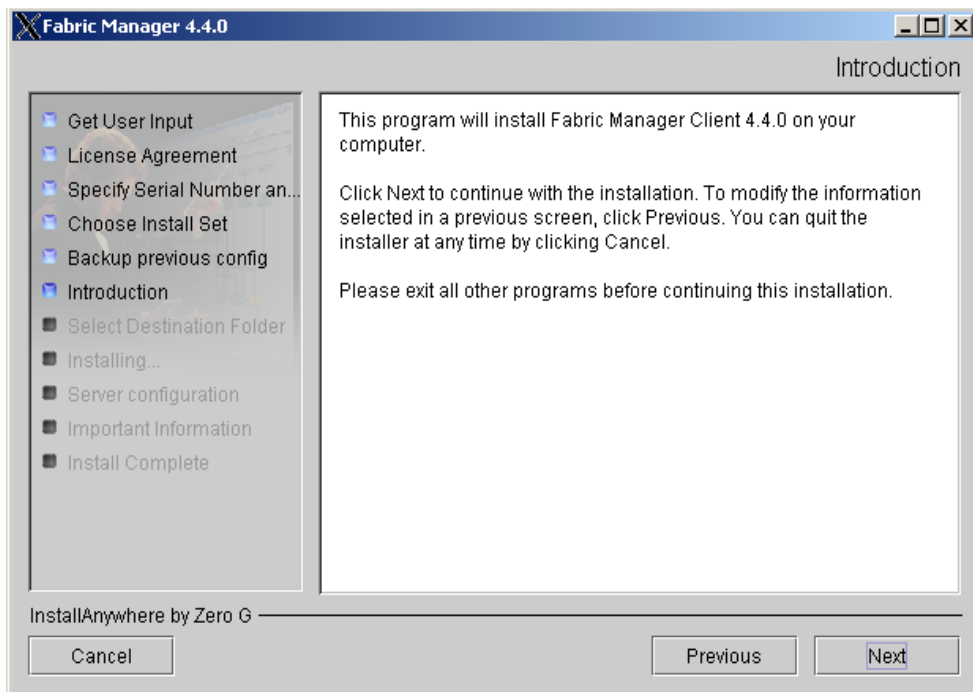


Figure 47 Installation introduction (client)

8. Read the introduction and then click **Next**.

The Select Destination Folder window appears (see [Figure 48](#)).

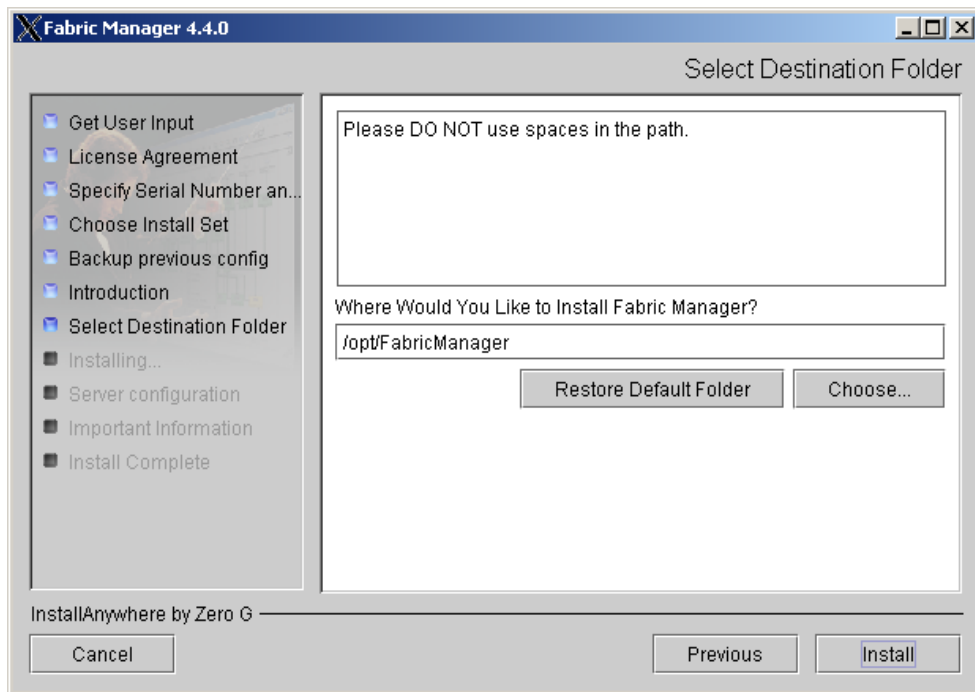


Figure 48 Select destination folder

9. Click **Install.**

You are advised to wait while Fabric Manager is installed on your machine.

The Configure Client Options window appears (see [Figure 49](#)).

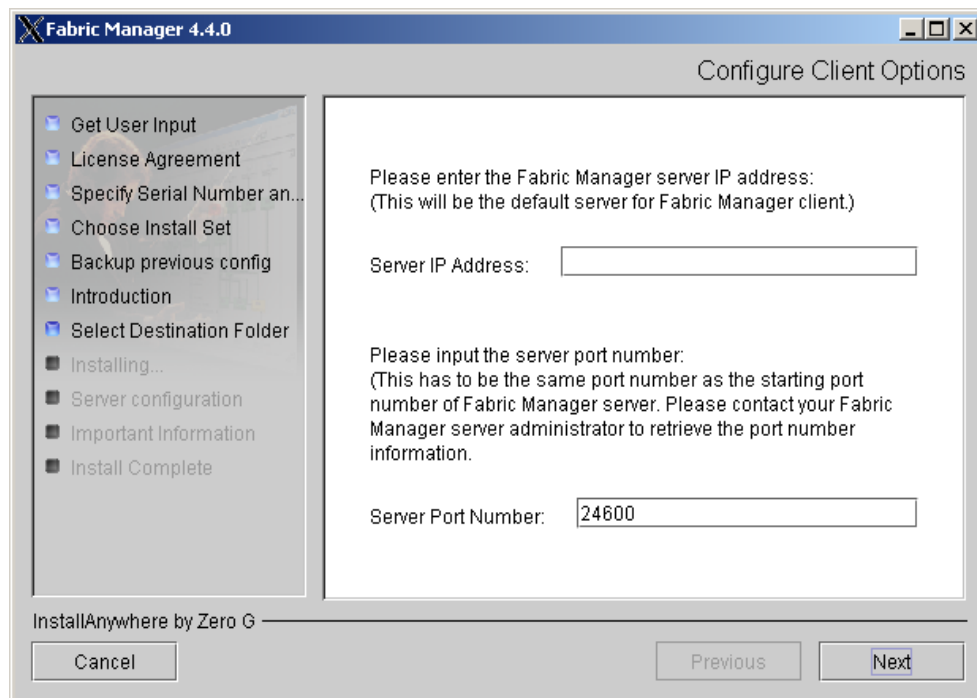


Figure 49 Configure client options

- 10.** Enter your server IP address and server port number. The server IP address you enter becomes the default server for the Fabric Manager client. The server port number must be the same port number as the starting port number of the Fabric Manager server.

11. Click **Next**.

The Install Complete window appears (see [Figure 50](#)).

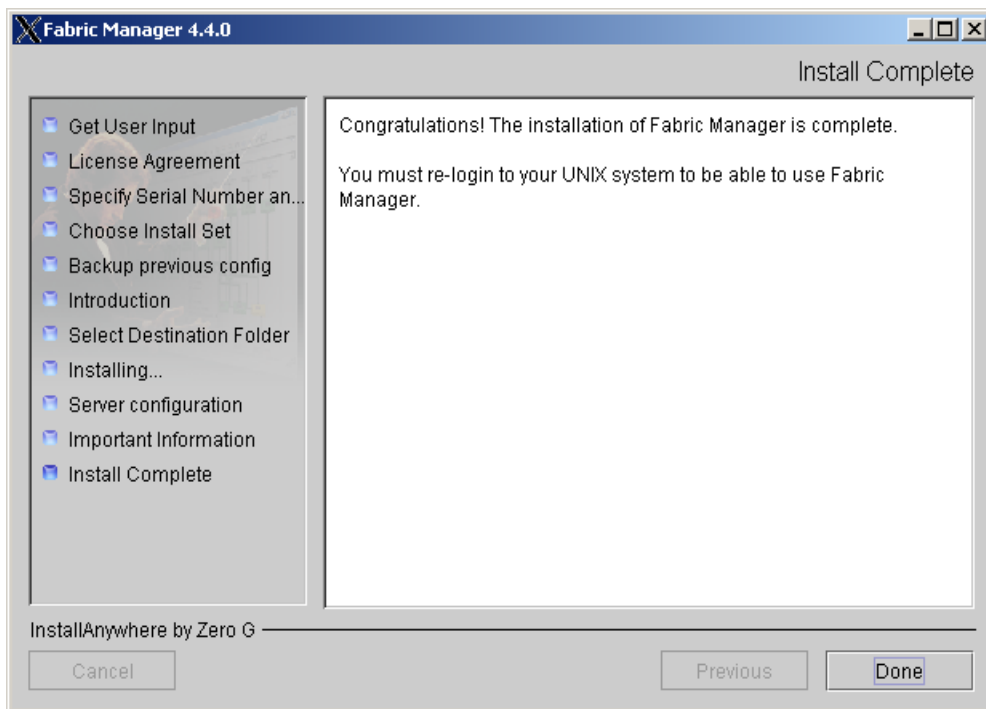


Figure 50 Install complete

12. Click **Done** to exit the install wizard.

Installing Fabric Manager server (for Solaris)



NOTE: You must have root access to install the Fabric Manager server on a Solaris system.

1. Click **install.bin** from the File Manager window that appears when you insert the Fabric Manager Installation CD-ROM.

2. Double-click the **Install** icon.

The Get User Input window appears (see [Figure 1](#) on page 25).

3. Select **Yes** or **No** and then click **Next**.

If you selected Yes, see ["Installing Fabric Manager client and server \(for Solaris\)"](#) on page 44 for additional installation instructions.

If you selected No, you must choose the type of installation (Full or Evaluation) you want (see [Figure 31](#) on page 48).

A valid serial number and license key are required to install the Full version of Fabric Manager. You cannot continue installing the Full version without a valid serial number and license key. See ["Installing the evaluation version \(for Windows and Solaris\)"](#) on page 43 for additional information about installing it and using Fabric Manager for a 60-day trial period.

4. Accept the license agreement (for either the Full or Evaluation version).

If you are installing the Full version, the Specify Serial Number and License Key window appears (see [Figure 32](#) on page 49).

If you are installing the Evaluation version, the Choose Install Set window appears (see [Figure 51](#)). Skip to [step 6](#).

5. Enter a valid serial number and license key and then click **Next**.

Fabric Manager begins configuring your machine, then the Choose Install Set window appears (see [Figure 33](#) on page 49).

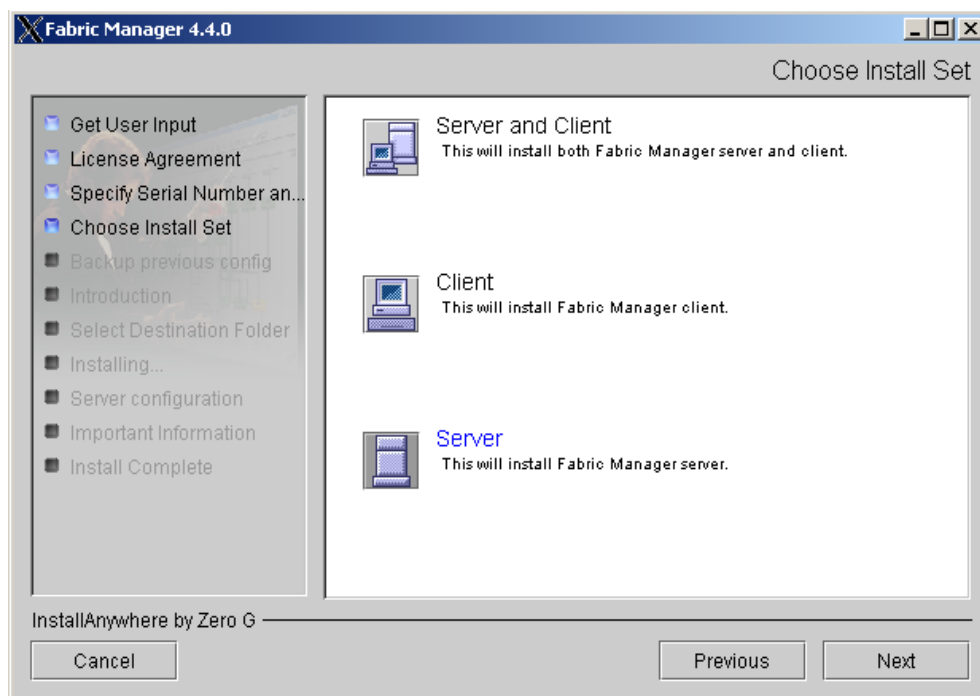


Figure 51 Choose install set (client, server, or server and client)

6. Click the **Server** icon and then click **Next**.

If you do not currently have a version of Fabric Manager server installed, the Introduction window is displayed (see [Figure 52](#)).

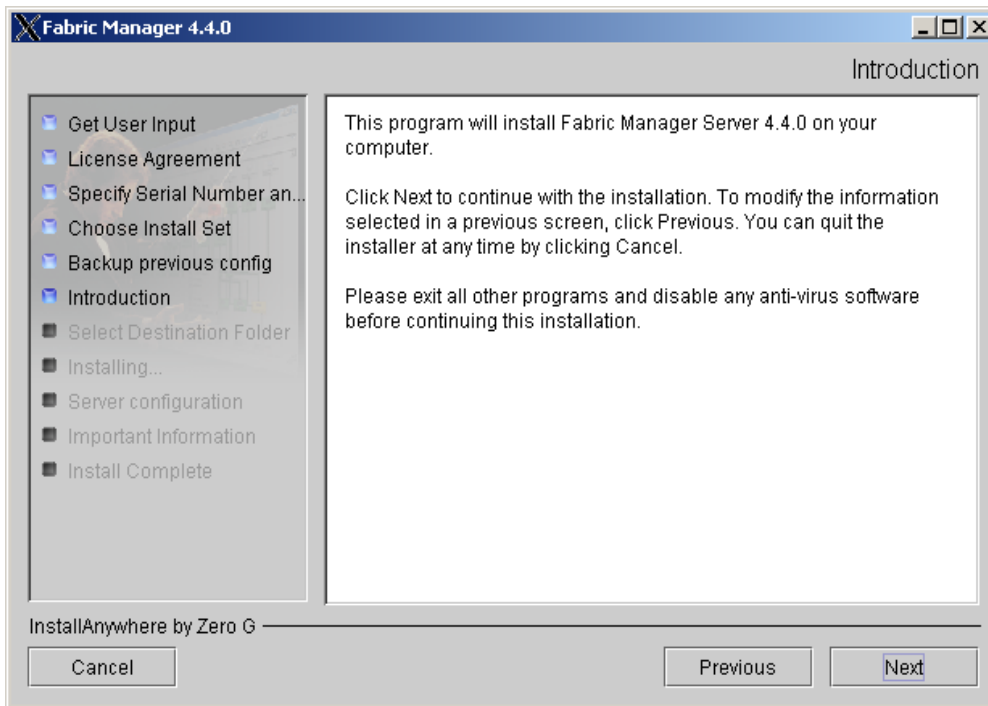


Figure 52 Installation introduction (server)

7. Read the introduction and then click **Next**.

The Select Destination Folder window appears (see [Figure 53](#)).

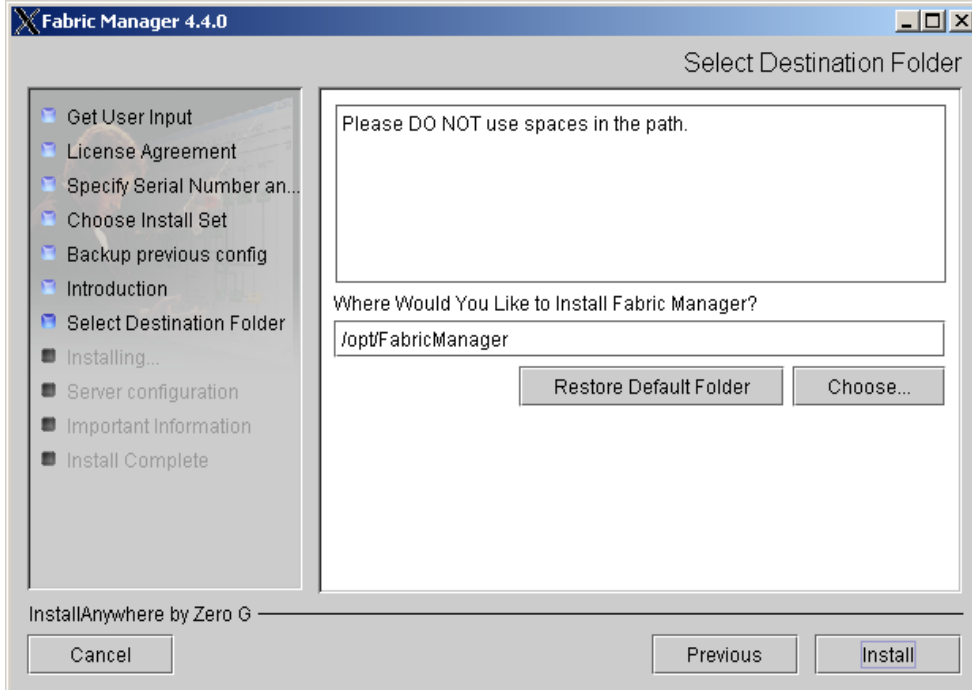


Figure 53 Select destination folder

8. Click **Install**.

You are advised to wait while Fabric Manager is installed on your machine.

The Please Specify Starting Port Number window appears (see [Figure 41](#) on page 54). The default starting port number is 24600. The port number you enter and the next five ports must be free ports. If the default starting port number is not a free port number, the server cannot start up correctly.

Optional: If you enter a new port number, you must ensure that all six ports (the port number you enter, and the next five ports) are free ports. Make a note of the port number that you enter. When you install clients to access this server, you must use the same port number during the client installation.

9. Click **Next.**

You are advised to wait while Fabric Manager configures your machine.

You are advised to select an authentication method: NIS authentication, switch-based authentication, or Password file authentication. Select one and then click **Next**.

10. If you selected NIS authentication, enter your NIS hostname/IP address and NIS domain name. You can omit the NIS domain name to force the Fabric Manager server to use broadcast to locate a valid NIS server or NIS slave.

If you selected switch-based authentication, enter the IP addresses of the switches and then click **Next**.

If you selected Password file authentication, click **Next** without entering any information.

The SAN size window appears (see [Figure 42](#) on page 55).

11. Select the size of the SAN that Fabric Manager will be managing (see [Table 6](#) on page 35 for a list of the polling rates for each SAN size).

12. Click **Next**.

You are advised to wait while Fabric Manager server is started (it may take a few minutes).

The Install Complete window appears (see [Figure 54](#)).

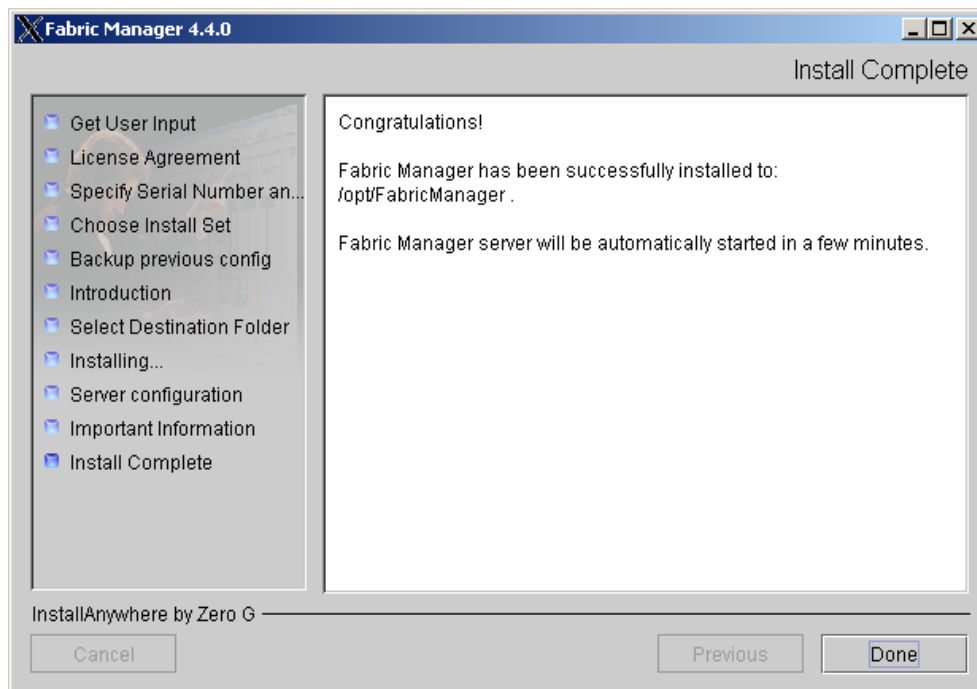


Figure 54 Install Complete window

13. Click **Done** to exit the install wizard.

Copying an installation from server to server

This section explains how to copy a Fabric Manager server installation from one server to another (keeping the same version). For example, you can copy Fabric Manager 4.2 from one server to another, or Fabric Manager 4.4 from one server to another.

Before attempting the copy, make sure that the following conditions exist:

- Host1 and Host2 are running the same version of the OS.
- Host2 is running the same version of Fabric Manager running on Host1.
- Host2 has the same Fabric Manager license as Host1.
- Fabric Manager installation on Host2 is in the same drive and directory as Host1 (for example, C:\FabricManager).
- If an external executable is used in a call home configuration on Host1, it is located at the same drive and directory on Host2.
- Fabric Manager server uses the same ports on Host2 that are used on Host1.
- The user enters the Host2 name/IP address when connecting from the Fabric Manager client.

Follow these steps to copy a Fabric Manager server installation:

1. Perform a fresh install of Fabric Manager server on Host2 in the same drive and directory as on Host1 and with the same license level. See ["Installing Fabric Manager server \(for Windows\)"](#) on page 40 or ["Installing Fabric Manager server \(for Solaris\)"](#) on page 60 for installation information.

You may specify XX for the authentication method, switch/domain name, and default port number; it is overwritten by the remainder of this procedure.

2. Stop the Fabric Manager client on Host1.
3. Stop the Fabric Manager database server on Host1:

For Windows, Select **Settings > Control Panel > Administrative Tools > Services > Adaptive Server Anywhere**.

For Solaris, run `stopDBServer.sh`.

4. Stop the Fabric Manager server on Host1:

For Windows, select **Settings > Control Panel > Administrative Tools > Services > FabricManagerServer**.

For Solaris, run `stopFabricManagerServer.sh`.

5. Stop the Fabric Manager database server on Host2:

For Windows select **Settings > Control Panel > Administrative Tools > Services > Adaptive Server Anywhere**.

For Solaris, run `stopDBServer.sh`.

6. Stop the Fabric Manager server on Host2:

For Windows, select **Settings > Control Panel > Administrative Tools > Services > FabricManagerServer**.

For Solaris, run `stopFabricManagerServer.sh`.

7. Delete the `fmserver` folder:

For example, the default from the Fabric Manager server installation on Host2 is:

```
C:\FabricManager\server\server\fmserver
```

8. Delete the `databases` folder:

For example, the default from the Fabric Manager server installation on Host2 is:

```
C:\FabricManager\server\db\SYBSsa9\databases
```

9. Copy the `fmserver` folder from the Fabric Manager server installation on Host1 to the same location on Host2

For example, the default is:

```
C:\FabricManager\server\server\fmserver
```

10. Copy the `databases` folder from the Fabric Manager server installation on Host1 to the same location on Host2

For example, the default is:

```
C:\FabricManager\server\db\SYBSsa9\databases
```

11. Delete all files displayed under the `log` folder within the `fmserver` folder.

For example, `C:\FabricManager\server\server\fmserver\log*`

12. Optional (only if you still want to access the old Fabric Manager server): Start the Fabric Manager database server on Host1:

For Windows, select **Settings > Control Panel > Administrative Tools > Services > Adaptive Server Anywhere**.

For Solaris, run `startDbServer.sh`.

13. Optional (only if you still want to access the old Fabric Manager server): Start the Fabric Manager server on Host1:

For Windows, select **Settings > Control Panel > Administrative Tools > Services > FabricManagerServer**.

For Solaris, run `restartFabricManagerServer.sh`.

14. Start the Fabric Manager database server on Host2:

For Windows, select **Settings > Control Panel > Administrative Tools > Services > Adaptive Server Anywhere**.

For Solaris, run `startDbServer.sh`.

15. Start the Fabric Manager server on Host2:

For Windows, select **Settings > Control Panel > Administrative Tools > Services > FabricManagerServer**.

For Solaris, run `restartFabricManagerServer.sh`.



NOTE: After copying the Fabric Manager server installation from Host1 to Host2 and confirming that it is working as expected on Host2, you may want to uninstall the Fabric Manager server installation from Host1 so that your switches are polled by only one Fabric Manager server.

To upgrade the Fabric Manager server installation on Host2:

1. Follow the steps in “[Copying an installation from server to server](#)” on page 64 to keep the same version of Fabric Manager server on Host2.
2. Upgrade the Fabric Manager server version on Host2 as directed in “[Installing Fabric Manager server \(for Windows\)](#)” on page 40 or “[Installing Fabric Manager server \(for Solaris\)](#)” on page 60.



NOTE: Do not install a newer version of Fabric Manager on Host2 and then overwrite those files by copying old files from Host1.

Launching Fabric Manager

To launch Fabric Manager for the first time:

1. For Windows: From the **Start** menu, select **Programs > Fabric Manager > Fabric Manager**.

For Solaris: Navigate to the location where you installed Fabric Manager and run the `startFabricManager` script.

The Fabric Manager Login dialog box opens (see [Figure 55](#)).

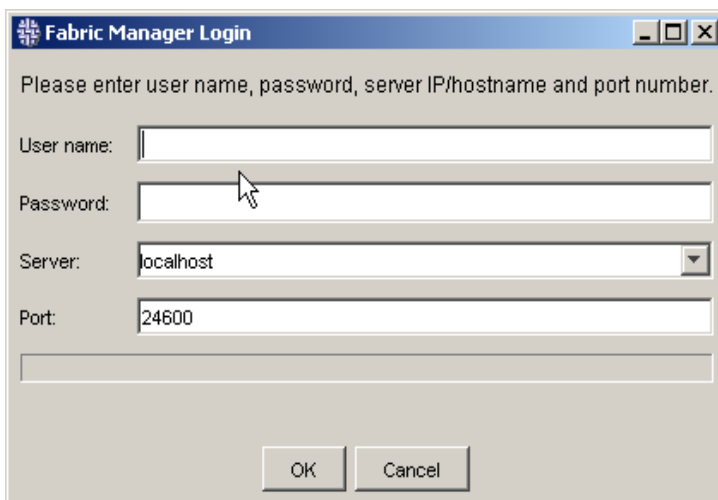


Figure 55 Registration dialog box

The Server and Port fields are automatically populated with the values that you specified when you installed Fabric Manager.

2. In the User name field, enter the user name that you use to log in to the server.

User names must be alphanumeric. They can contain only the following special characters: underscores (`_`), hyphens (`-`), and periods (`.`).



NOTE: Fabric Manager stores your user name and populates the User name field whenever you subsequently launch the software.

3. In the Password field, enter the password that you use to log in to the server and then click **OK**.

Fabric Manager launches (see [Figure 56](#)).

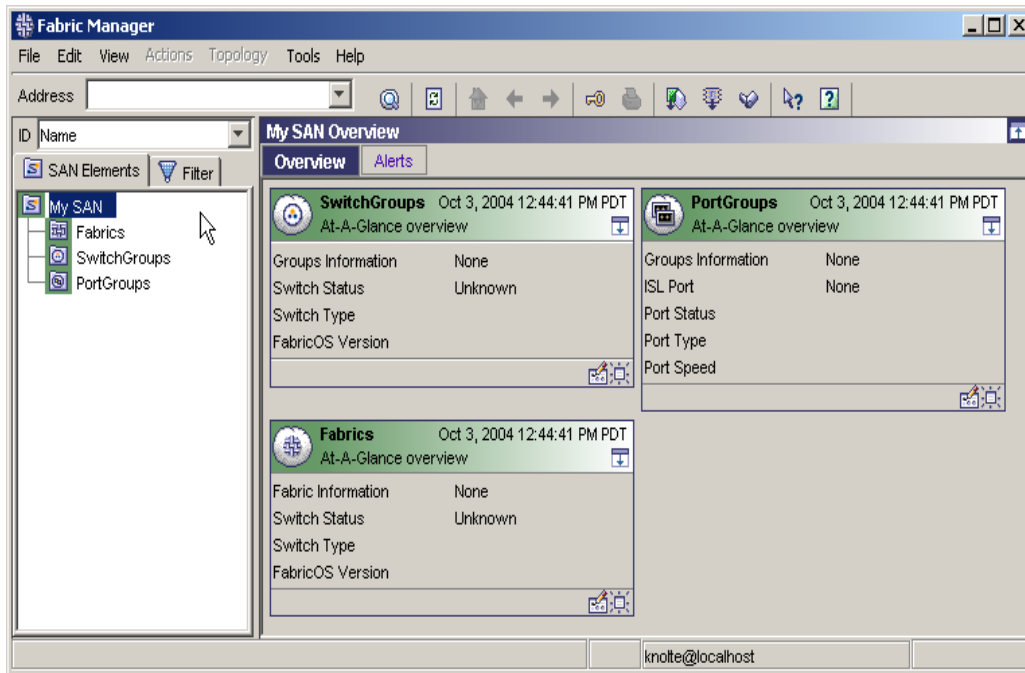


Figure 56 Fabric Manager initial launch default window



NOTE: See “[Discovering a fabric](#)” on page 117 for information about adding devices from a SAN for Fabric Manager to begin monitoring.

Upgrading Fabric Manager

If you are upgrading to Fabric Manager v4.4.0, see [Table 7](#) for new license requirements or configuration changes that may be necessary.

Table 7 Upgrading Fabric Manager

Current version	Upgrade to Fabric Manager v4.4.0	
	License requirements	Configuration
3.0.2c	New license key required	Must be redone
4.0.0 or 4.0.1	License retained with upgrade	Retained
4.1.0, 4.1.1, and 4.2.0	License retained with upgrade	Retained

Versions of Fabric Manager earlier than v4.2.0 permitted individual user-level settings to be stored on their respective client machines. On subsequent releases (Fabric Manager v4.2.0 or later), all fabric, switch, and port settings are global for each user (client) sharing the same Fabric Manager server. When you upgrade to Fabric Manager 4.2.0 or later, you can select the fabric and group settings for one user (client) and migrate them to the upgraded server for each user (of that server) to use. All information previously stored in the `FabricManagerUser.properties` and `SystemInfo.txt` files is migrated to the new version of Fabric Manager.

These files include:

- Fabrics/switch/port and group level details (such as names and descriptions) as defined for one specified user during the Fabric Manager 4.4.0 installation
- Switch login state and passwords as defined for one specified user during the Fabric Manager 4.4.0 installation

The following information cannot be migrated to Fabric Manager 4.4.0; it must be reset by any user on the server:

- Topology settings
- View customization
- At-A-Glance window customization

Registering Fabric Manager

Fabric Manager is automatically registered during installation of the Full version (see ["Installing Fabric Manager client and server \(for Windows\)"](#) on page 24 or ["Installing Fabric Manager server \(for Windows\)"](#) on page 40). If you initially installed the *Evaluation* version of Fabric Manager, you need to register it within 60 days. After 60 days, the Evaluation version becomes inoperable until it is registered. After you register the Evaluation version, it becomes the Full version of Fabric Manager.

To register Fabric Manager:

1. Select **Register** from the Help menu.
2. Enter a valid serial number and license key in the Fabric Manager Registration window.
3. Click **Enter**.
A Congratulations dialog box opens, indicating that you have registered Fabric Manager successfully.
4. Click **OK**.
5. Click **Cancel** to close the Fabric Manager Registration window.

Uninstalling Fabric Manager

This section describes how to uninstall Fabric Manager from either a Windows or Solaris operating system.

Uninstalling from Windows

1. From the **Start** menu, select **Programs > Fabric Manager > Uninstall Fabric Manager** to launch the uninstall wizard.

The Uninstall Fabric Manager wizard appears (see [Figure 57](#)).

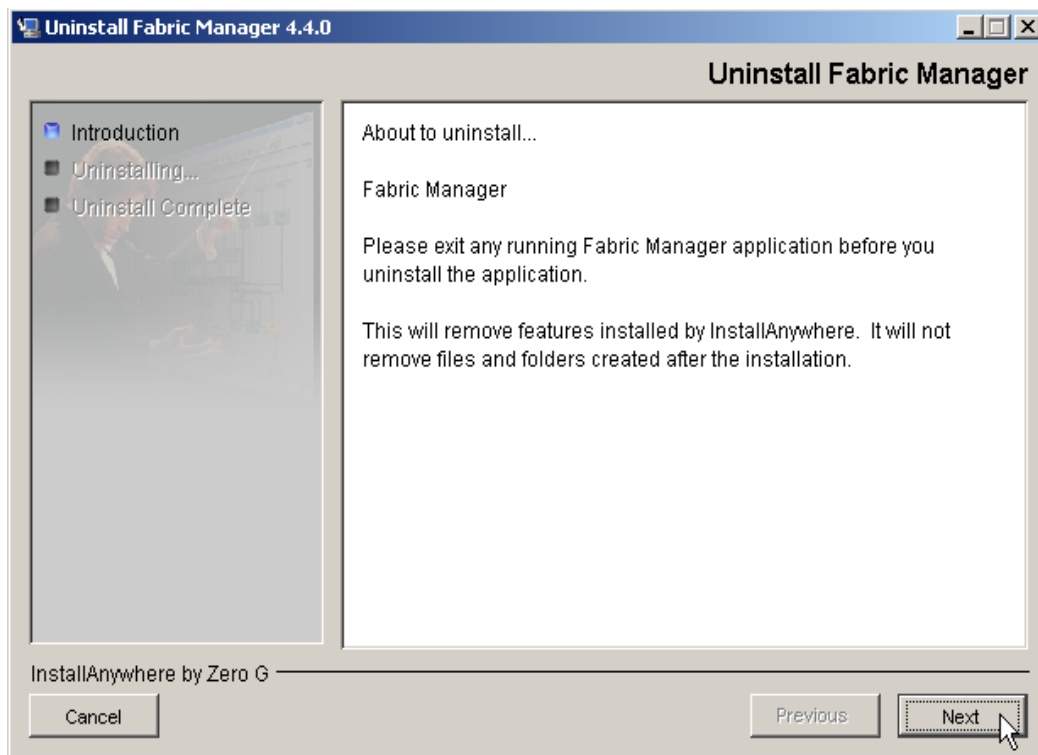


Figure 57 Uninstall Fabric Manager wizard

2. Click **Next**.
3. You can then choose to uninstall Fabric Manager client and server from your machine simultaneously (select **Complete Uninstall**) or to uninstall one or the other (select **Uninstall Specific Features**).
4. Click **Next**.



NOTE: If you select the Uninstall Specific Features option, you must then uncheck the feature (Fabric Manager client or Fabric Manager server) that you want to uninstall.

5. Click **Uninstall**.
6. Click **Done**.

Uninstalling from Solaris

1. Navigate to the location where you installed Fabric Manager.
2. From the `Fabric_Manager/ UninstallerData` directory, run `Uninstall_FabricManager` (see [Figure 57](#)).
3. Click **Next**.
4. You can then choose to uninstall Fabric Manager client and server from your machine simultaneously (select **Complete Uninstall**) or to uninstall one or the other (select **Uninstall Specific Features**).
5. Click **Next**.



NOTE: If you selected the Uninstall Specific Features option, you must then uncheck the feature (Fabric Manager client or Fabric Manager server) that you want to uninstall.

6. Click **Uninstall**.
7. Click **Done**.

2 Introducing Fabric Manager

Fabric Manager is a complete storage area network (SAN) management tool for HP-based SANs. You can use Fabric Manager to configure multiple switches simultaneously from one location, view the status of multiple devices in one window, and perform SAN-level maintenance without having to access each switch in your fabric or SAN. Fabric Manager is tightly integrated with additional SAN management products (including Advanced Web Tools and Fabric Watch), and can be used with other SAN and storage resource management applications as the tool to drill down into single or multiple HP fabrics.

Fabric Manager includes the following basic features to manage multiple SANs:

- Management of multiple HP StorageWorks switch elements across multiple fabrics.
- SAN discovery and data collection, with multiple views of the collected data (including topology maps and detailed views in tabular format).
- Status of critical fabric elements and key discovery data at varying levels of detail, such as high-level At-A-Glance views (see [Figure 58](#)), and detailed tables that display information about switches, ports, devices, and events. [Table 8](#) provides a summary of the home window.
- Data and management console views designed for effective management of a FICON environment.



NOTE: FICON is not supported at this time.

Fabric Manager includes the following advanced features for additional management capabilities:

- Fabric, switch, and port naming (see [Chapter 3, “Fabric management”](#))
- Data storage (persistent files) (see [Chapter 3, “Fabric management”](#))
- Change management (see [Chapter 11, “Change management administration”](#))
- License key management (see [Chapter 4, “License key administration”](#))
- HBA management (see [Chapter 5, “Firmware download administration”](#))
- Scalable firmware download (see [Chapter 5, “Firmware download administration”](#))
- Call home support (see [Chapter 14, “Configuring Call Home support”](#))
- End-to-end performance monitoring (see [Chapter 19, “Performance monitoring”](#))
- Secure Fabric OS management (see [Chapter 16, “Security administration”](#))

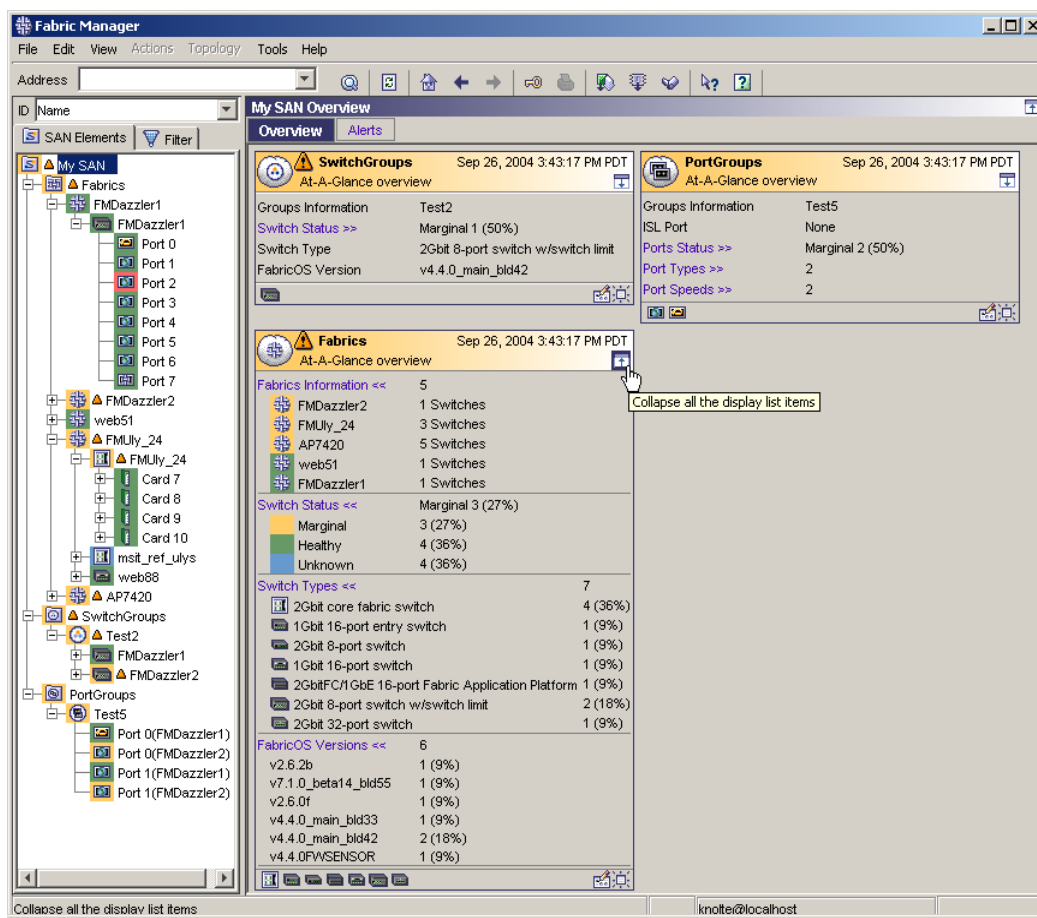


Figure 58 Fabric Manager home window (SAN node At-A-Glance)

Table 8 Description of Fabric Manager home window (SAN node At-A-Glance)

Object	Description
Menu bar	Includes the File (see "File menu" on page 76), Edit (see "Edit menu" on page 77), View (see "View menu" on page 78), Actions (see "Actions menu" on page 108), Topology (see "Topology menu" on page 112), Tools (see "Tools menu" on page 112), and Help (see "Help menu" on page 116) menus.
Address edit box/drop-down menu	Use the Address edit box to enter the IP address or switch name of any new switches or fabrics you want to monitor. When used as a menu, Address menu also lists the fabrics that you have previously discovered.
Standard icons	A set of standard icons appear across the top of each view; these are described in Table 9 on page 75. Additional icons appear for the Topology view (see Table 21 on page 91).
ID menu	The ID menu provides four different identifiers you can use to view SAN elements (name, IP address, domain ID, or WWN). Select the identifier that you want Fabric Manager to use as it displays each element.

Table 8 Description of Fabric Manager home window (SAN node At-A-Glance) (continued)















Object	Description
View selector bar	Each SAN element you select has different views available to help you monitor their status. The view selector bar (see Figure 59 on page 78) provides access to each available view for the element you have selected. The views available for the selected SAN element mirror the views available via the View menu (see "View menu" on page 78). You can view () or hide the view selector bar using the appropriate view selector icon. In Figure 58 on page 72, with the SAN Node selected within the SAN Elements tab, only the Overview and Alerts views are available. See "View menu" on page 78 for a description of each view type.
SAN Elements tab	The SAN Elements tab displays the various elements that you monitor with Fabric Manager. When you use Fabric Manager, you repeatedly select items from the SAN Elements tab to configure and monitor. Whenever a SAN element changes physical status, the background of its corresponding icon within the SAN Elements tab changes color, and the background colors of the parent element icons also change. However, port status does not affect the background color of switch icons. If the background of an element in your SAN Elements tab changes color, the change does not necessarily represent the failure of an entire fabric or switch. Expand the navigation tree to identify the source of the status change. See Color codes for a description of the color coding.
Filter tab	The Filter tab lets you view elements that include a particular alphanumeric string. For example, if you name all of the switches for your Accounting team acctx, where x is a number, you can view only the accounting switches by selecting Name from the pull-down menu, entering acct in the text field, and clicking Enter. Each switch that has acct in its name is then displayed within the Filter tab. You can filter elements using IP, name, switch, version, domain ID, and WWN attributes. For more information on how to filter elements, see "Filtering elements" on page 125.
Overview view	The Overview view for your SAN Node is displayed in Figure 58 on page 72. The Overview view also includes At-A-Glance views for all the elements in your SAN, including one for your Fabrics, Switches, Ports, Port Cards, SwitchGroups, and PortGroups. See "Overview view" on page 80 for additional information about the Overview view and its embedded At-A-Glance views.

Table 8 Description of Fabric Manager home window (SAN node At-A-Glance) (continued)

Object	Description
Color codes	<p>The colors that appear throughout the GUI (for example, as icon backgrounds in the SAN Elements tab, as background headers in the At-A-Glance views, or as status indicators) provide a quick, visual status. These colors correspond to the Status Legend available from the Help menu (Help > Status Legend):</p> <ul style="list-style-type: none">• green = healthy• yellow = marginal• red = down• orange = missing switch• blue = unknown• gray = unmonitored <p>See “Help menu” on page 116 for additional information.</p>
Footer information	<ul style="list-style-type: none">• The default information displayed in the bottom left corner of the GUI corresponds to the number of items within the selected SAN Element. This information changes if you move your cursor over GUI elements and perform specific tasks (for example, if you move the cursor over the  icon in the Fabrics At-A-Glance overview within Figure 58 on page 72, the informational display changes from 3 items to Collapse all the display list items.• The username and domain location are displayed in the bottom-right portion of the GUI. For example, Figure 58 on page 72 displays knolte@localhost.

[Table 9](#) provides a description of the standard icons available within each View.

Table 9 Standard icons

Icon	Name	Description
	Subnet scan	Opens the Subnet scan dialog box to help you discover fabrics. For more information, see "Running a subnet scan (fabric scan)" on page 118.
	Refresh	Refreshes the displayed information.
	Home	Navigation icon: Returns to the view that appeared when you opened Fabric Manager (see Figure 58 on page 72).
	Previous	Navigation icon: Returns to the previous view in the navigation history (if applicable). If you click the Previous icon for more than half a second, a menu showing the previous 10 views appears. You can select one of the Views or select Cancel.
	Next	Navigation icon: Moves forward to the next view in the navigation history (if applicable). If you click the Next icon for more than half a second, a menu showing the previous 10 views appears. You can select one of the Views or select Cancel.
	Fabric login	Launches the Fabric login dialog box so you can log in to one or more switches. For more information, see "Logging in to multiple switches simultaneously" on page 130.
	Print	Prints the contents of the view. The Print icon is available from all views except the Overview view. For all table-format views, clicking the Print icon prints the information in the table. For the Topology view, the Print icon prints the graphical information currently displayed in the Topology view.
	Firmware download to HBAs	Launches the Firmware download to HBAs dialog box.
	Firmware download to switches	Launches the Firmware download to switches dialog box. For more information, see Chapter 12, Event monitoring .
	Sequenced reboot	Launches the Sequenced reboot dialog box. For more information, see Chapter 13, Managing alerts .
	Context Help	Changes your pointer to the help pointer. Click an element of the GUI for context-sensitive help.
	Help	Opens Fabric Manager online help.

The following sections provide an overview of each menu within the Fabric Manager menu bar. The availability of menus and submenus is dependent upon the element selected within the SAN Elements tab.

- ["File menu"](#) on page 76
- ["Edit menu"](#) on page 77
- ["View menu"](#) on page 78
- ["Actions menu"](#) on page 108
- ["Topology menu"](#) on page 112
- ["Tools menu"](#) on page 112
- ["Help menu"](#) on page 116

File menu

The File menu provides basic administrative options for you to use in Fabric Manager. [Table 10](#) describes the options in the File menu.

Table 10 File menu options

Option	Description
New	Opens a new Fabric Manager window. All other Fabric Manager windows remain open.
Close	Closes the active Fabric Manager window. This option is only available when multiple Fabric Manager windows are open.
Fabric Login	Opens the Fabric Login window (see Figure 92 on page 131) to log in to multiple switches simultaneously. See "Setting the log level" on page 140 for additional information.
Groups	<p>Opens the Groups submenu. You have the following choices:</p> <ul style="list-style-type: none">• Edit Switch Groups <p>Opens the Edit Switch Groups window (see Figure 96 on page 136) where you can create or modify switch groups. See "Editing a switch group" on page 138 for additional information.</p>• Edit Port Groups <p>Opens the Edit Port Groups window (see Figure 97 on page 138) where you can create or modify port groups. See "Editing a port group" on page 140 for additional information.</p>

Table 10 File menu options (continued)

Option	Description
Options	<p>Opens the Options window to set default options for the following areas:</p> <ul style="list-style-type: none"> General This includes Persist switch passwords and Show table tooltips. See "Enabling and disabling switch passwords" on page 132 and "Enabling and disabling table view tooltips" on page 123 for additional information. Topology This includes Default Startup Layout, Default Startup Link Style, Default Link Bundle State, and Tile Direction. See Chapter 8, Topology management for additional information. Log Parameters Sets the log parameters. See "Setting the log level" on page 140 for additional information. File Transfers Sets up the file transfer configuration. See "Configuring file transfer options" on page 141 for additional information.
Print	Opens the Print window to print a report summary or topology. See Chapter 3, Introducing Fabric Manager for additional information.
Print In One Page	Opens the <i>Print</i> window to print a topology to one page. See Chapter 3, Introducing Fabric Manager for additional information.
Page Setup	Opens the Page Setup window to configure print options.
Exit	Closes Fabric Manager.

Edit menu

The Edit menu manages elements of the GUI. [Table 11](#) describes the options in the Edit menu. The Copy Table, Save Data, View, and Sort Order options are useful for working with all the table-oriented views. See [Table 12](#) on page 80 for a list of the table-oriented views.

Table 11 Edit menu options

Option	Description
Copy Table	Copies the entire table automatically to your clipboard. You can then paste it into an application that uses tab-delimited cell and/or return-delimited row format. The Copy Table option is not available for the Topology, Overview, or LSAN views.
Save Data	Save a table to a tab-delimited file with this option. The Save Data option is not available for the Topology, Overview, or LSAN views.

Table 11 Edit menu options (continued)

Option	Description
Rename	<p>Changes the identifier of a switch, port, or fabric in the SAN Elements tab. Click the item you want to rename (fabric, switch, or port) from the SAN Elements tab and then select Rename from the Edit menu.</p> <p>Changes the switch name on the switch. The port name is changed on the switch only if it is running Fabric OS v3.1 or later or v4.x (except v4.0). The port name is stored on the Fabric Manager server for all other Fabric OS versions. The fabric name is stored only on the Fabric Manager server (it is never set on the switch).</p>
View Options	Opens the Edit View Options for X window (where X represents the current active view) to customize the Fabric Manager display. You can choose to add or delete items from the current view. See "Customizing views" on page 121 for additional information on this window.
Sort Order	Opens the Edit Sort Order dialog box, which allows you to sort the order of the columns displayed in the table. The Sort Order option is not available for the Topology, Overview, or LSAN views. See "Storing data and performing backups" on page 143 for additional information about sorting data in tables.
Change description	Opens the Please enter the new description dialog box to change an At-A-Glance window description. By default, this description reads <code>Double click to add description</code> . After you change the description, you must click the parent element within the SAN Elements tab to view the new description in the At-A-Glance window. This option provides an alternative method to change the description and it is available only within the Overview view. See "Setting the log level" on page 140 for additional information.

View menu

The View menu lists the various Fabric Manager views available for use with the element selected from within the SAN Elements tab. [Table 12](#) on page 80 lists the views that are available for each element. The View menu mirrors the available choices displayed in the View selector bar ([Figure 59](#)).

**Figure 59** View selector bar

[Figure 59](#) displays the views that are available with a *Fabric* selected from within the *SAN Elements* tab. The LSAN Info view is not available because an MP Router is not in the fabric selected.

You can use the View menu or the view selector bar to navigate Fabric Manager. The following sections provide information about each view:

- ["Overview view"](#) on page 80 (includes the *At-A-Glance* windows)
- ["Alerts view"](#) on page 88
- ["Topology view"](#) on page 90
- ["Switches view"](#) on page 92
- ["Ports view"](#) on page 94

- ["Device Ports view"](#) on page 96
- ["Device Nodes view"](#) on page 99
- ["Portgrid view"](#) on page 101
- ["LSAN view"](#) on page 102
- ["LSAN Info View"](#) on page 103
- ["Events view"](#) on page 107

Table 12 View availability for each SAN Element selection

Available view	SAN Elements									
	My SAN	Fabrics node	Fabric	Switch	Card	Port	Switch groups node	Switch group	Port groups node	Port group
Overview	X	X	X	X	X	X	X	X	X	X
Alerts ¹	X	X	X	X			X	X		
Topology		X	X				X	X		
Events ¹			X	X				X		
Ports ¹				X	X					X
Switches ¹			X					X		
Portgrid ¹			X	X				X		
Device Nodes ¹			X	X	X	X		X		X
Device Ports ¹			X	X	X	X		X		X
LSAN View ¹			X							
LSAN Info ¹				X ²						
¹ The Alerts, Events, Ports, Switches, Portgrid, Devices, Device Ports, LSAN View, and LSAN Info views are displayed in a tabular format.										
² The LSAN Info view is only available when you have an MP Router selected within the SAN Elements tab.										

Overview view

The Overview view provides a graphical representation of the child elements for the item selected within the SAN Elements tab. The child elements are displayed in At-A-Glance windows within the Overview view.

For example, if you have a Fabric selected in the SAN Elements tab, all switches within that fabric are displayed in the Fabric At-A-Glance window (see [Figure 62](#) on page 82) within the Overview view. Each switch has its own At-A-Glance window; information about the switch is displayed in the window. You can customize the information that is displayed about each element within their At-A-Glance window in the Overview view. To customize the view options for an element, see ["Customizing views"](#) on page 121.

Each At-A-Glance window includes a series of icons at the bottom. The icons in the bottom-left corner of each At-A-Glance window represent the element type. Move your cursor over the element icon to receive a tooltip description (see [Figure 60](#)). One icon displays for each type of element under that node.

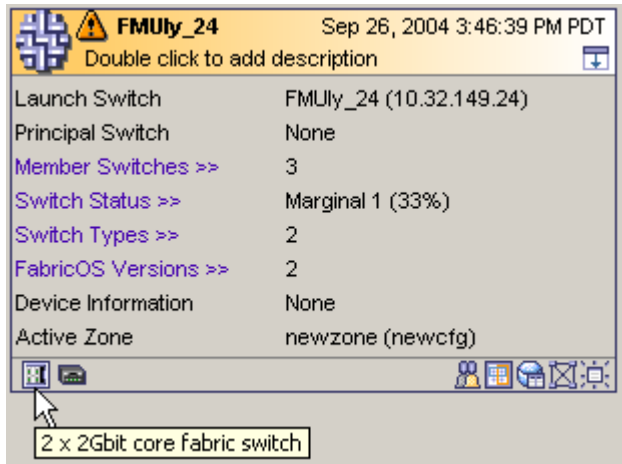





Figure 60 Example tooltip description of an element icon



When you select the SAN Node from the SAN Elements tab (see [Figure 58](#) on page 72), the icons described in [Table 13](#) are also displayed in its At-A-Glance window.

Table 13 SAN node At-A-Glance icons

Icon	Name	Description
	Expand List	Expands the list within the <i>At-A-Glance</i> window to reveal additional information. Located in the header of the <i>At-A-Glance</i> window.
	Set Display Item List	Launches the Edit View Options dialog box so you can customize the information displayed in the view.
	Update	Updates the information in the displayed window.

In addition to the SAN Node At-A-Glance window, the other At-A-Glance windows within the Overview view are described in the following sections:

- "[At-A-Glance window header](#)" on page 81
- "[Switch At-A-Glance windows](#)" on page 83
- "[Port At-A-Glance windows](#)" on page 84
- "[Port At-A-Glance \(port cards\) window](#)" on page 86
- "[SwitchGroups At-A-Glance windows](#)" on page 87
- "[PortGroups At-A-Glance windows](#)" on page 88

Each At-A-Glance window (see [Figure 61](#)) includes a color-coded header (see Color codes in [Table 8](#) on page 72) and corresponding alert icon (for example, ) to indicate its status. The header also includes a timestamp denoting when the information was captured and the  icon for expanding the information provided in the window.

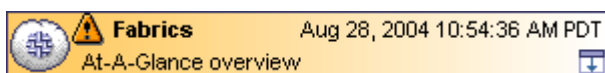


Figure 61 At-A-Glance window header

Fabric At-A-Glance windows

Table 14 describes the functional icons displayed in each *Fabric At-A-Glance* window (see Figure 62) when you select the Fabrics node from within the SAN Elements tab. The element icons (see Figure 60 on page 81) are displayed in the lower-left corner of the At-A-Glance window and are for informational purposes only.

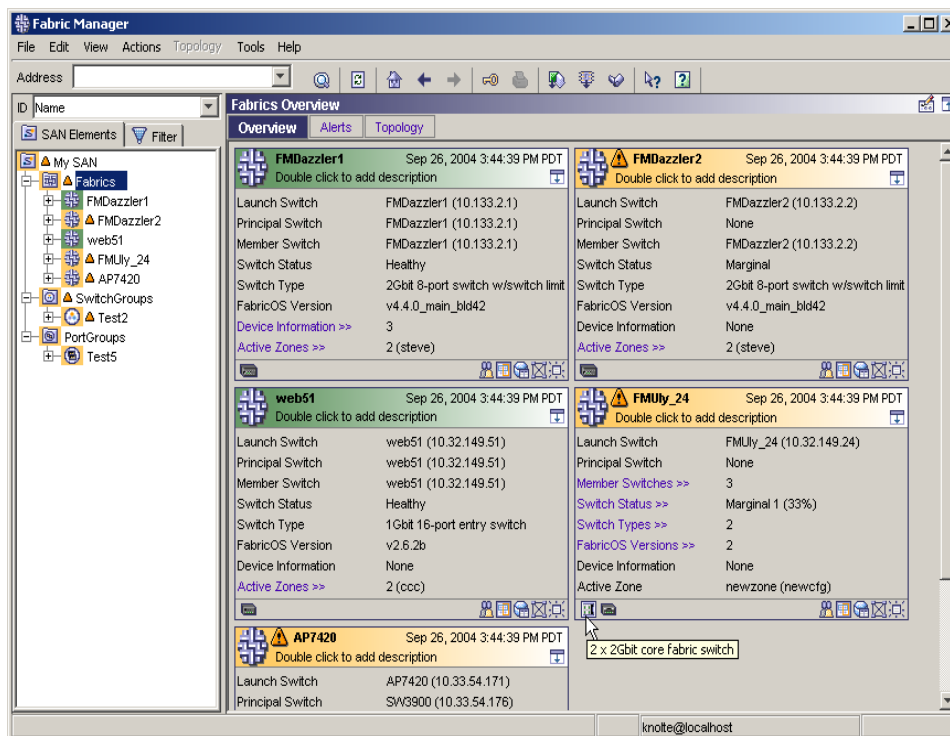


Figure 62 Fabric At-a-glance window

Table 14 Fabric At-A-Glance icons









Icon	Name	Description
	Expand List	Expands the list within the At-A-Glance window to reveal additional information. Located in the header of the At-A-Glance window.
	Fabric Events	Opens Events view in a new Fabric Manager window for the appropriate fabric. or example, if you click the Fabric Events icon in the Switch X" pane, Fabric Manager selects Switch X from the SAN Elements tab and opens the Events view. See "Events view" on page 107 for additional information.
	Zone Admin	Opens the Zone Admin window of Web Tools. See Chapter 15, "Zone administration" for additional information.
	Name Server	Opens the Name Server Table window of Web Tools. See Chapter 7, "Name Server" for additional information.
	Fabric Topology	Opens the Topology view. See "Topology view" on page 90 for additional information.

Table 14 Fabric At-A-Glance icons (continued)

Icon	Name	Description
	Security Admin	Opens the Security Admin window. This icon only appears in the window if the fabric is secure.
	Telnet to FCS	Opens a telnet session to the FCS. See "Using telnet on a Secure Fabric" on page 303 for additional information. This icon only appears in the window if the fabric is secure.
	Update	Updates the information in the displayed window.

Switch At-A-Glance windows

Table 15 describes the functional icons displayed in each Switch At-A-Glance window (see Figure 63) when you select a fabric from within the SAN Elements tab. The element icons (see Figure 60 on page 81) are displayed in the lower-left corner of the At-A-Glance window and are for informational purposes only.

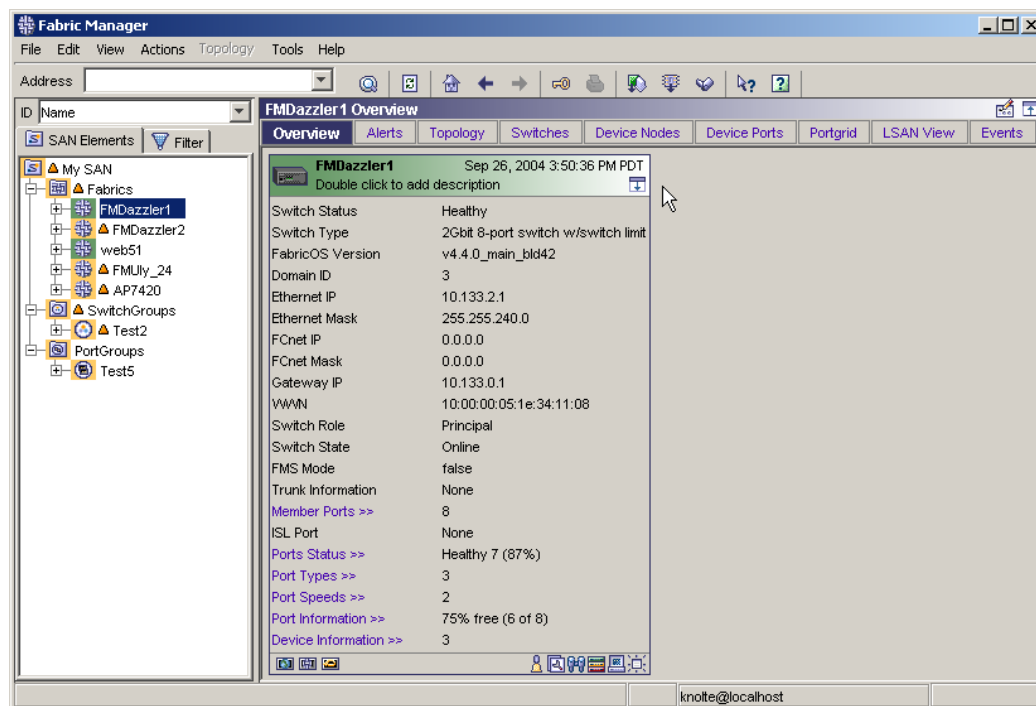









Figure 63 Switch At-A-Glance window

Table 15 Switch At-A-Glance icons

Icon	Name	Description
	Expand List	Expands the list within the At-A-Glance window to reveal additional information. Located in the header of the At-A-Glance window.
	Switch Events	Opens the Events view (see “ Events view ” on page 107) for the switch in a new Fabric Manager window.
	Admin View	Launches the Switch Admin window of Web Tools.
	Fabric Watch	Launches the Fabric Watch window of Web Tools. See Chapter 9 , “ Fabric Watch administration ” for additional information.
	Health Report	<p>Opens the Switch Health Report (see “Displaying the switch health report” on page 134).</p> <p>Note that the Switch Health Report is available only for switches running Fabric OS v3.2/v4.4 or later. The Health Report icon is not displayed in the At-A-Glance window for switches running Fabric OS versions earlier than v3.2/v4.4.</p>
	Telnet	Opens a telnet session to the switch. See “ Opening a telnet session for a nonsecure switch ” on page 134 for additional information.
	Update	Updates the information in the displayed window.

Port At-A-Glance windows

[Table 16](#) describes the functional icons displayed in each Port At-A-Glance window (see [Figure 64](#) and [Figure 65](#)) when you select a particular switch from within the SAN Elements tab. The element icons (see [Figure 60](#) on page 81) are displayed in the lower-left corner of the At-A-Glance window and are for informational purposes only. The Port At-A-Glance windows for bladed switches (such as the Core Switch 2/64 and the SAN Director 2/128) provide an overview of the port cards (see [Figure 65](#)).

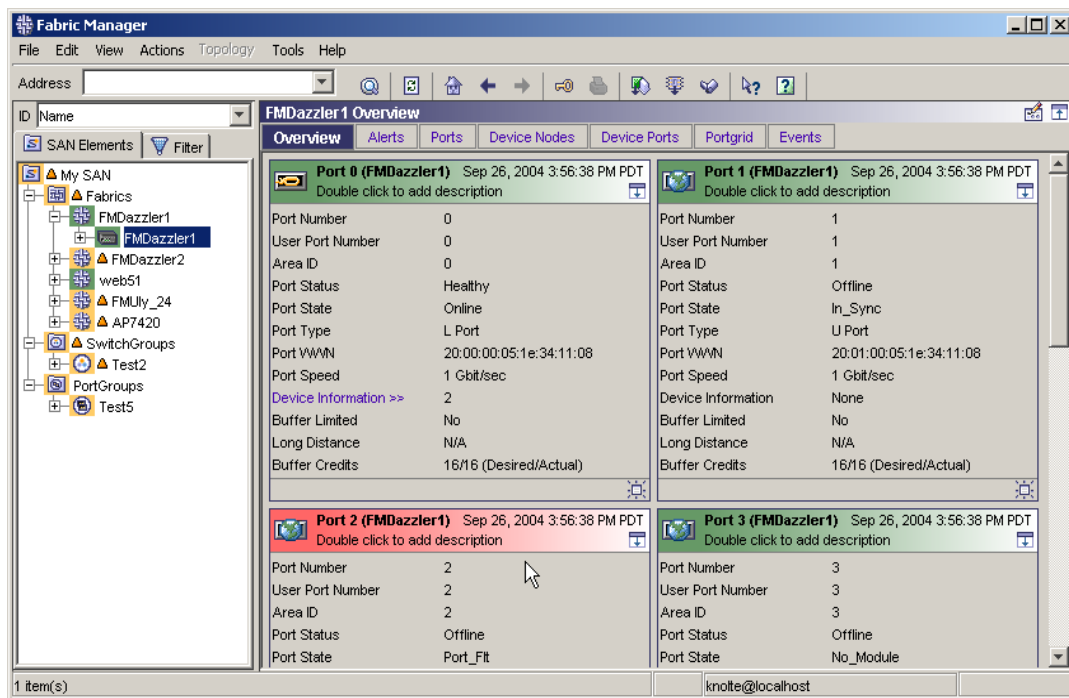




Figure 64 Port At-A-Glance window

Table 16 Port At-A-Glance icons

Icon	Name	Description
	Expand List	Expands the list within the At-A-Glance window to reveal additional information. Located in the header of the At-A-Glance window.
	Update	Updates the information in the displayed window.

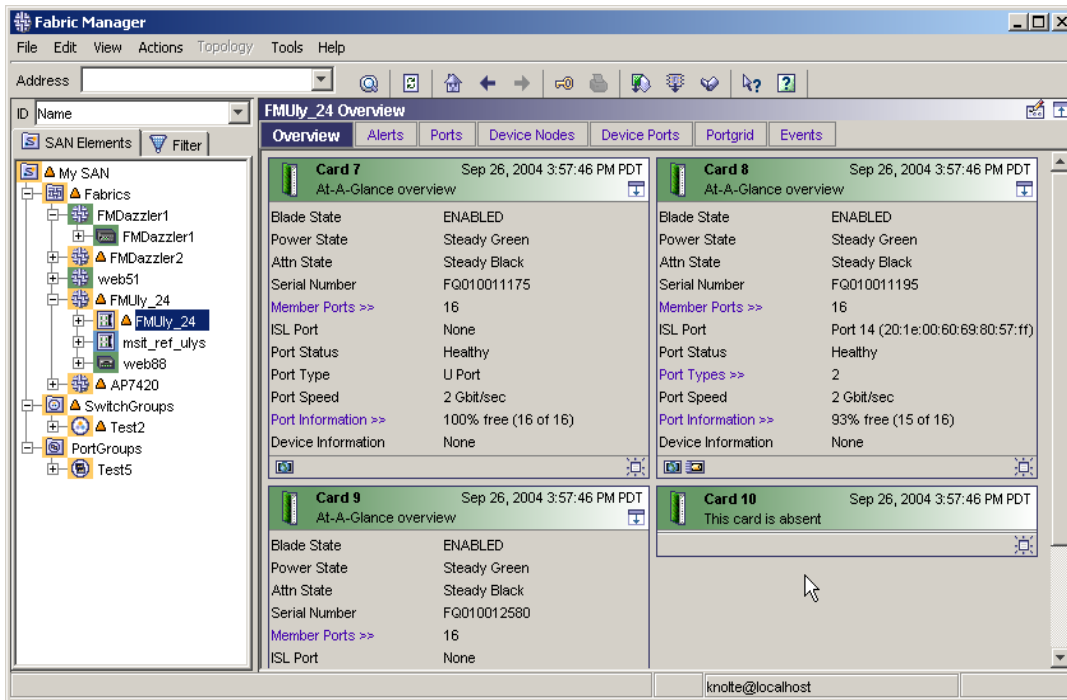


Figure 65 Port At-A-Glance (port cards) window

Device At-A-Glance windows

Table 17 describes the functional icons displayed in each Device At-A-Glance window (see Figure 66) when you select a port (with devices) from within the SAN Elements tab.

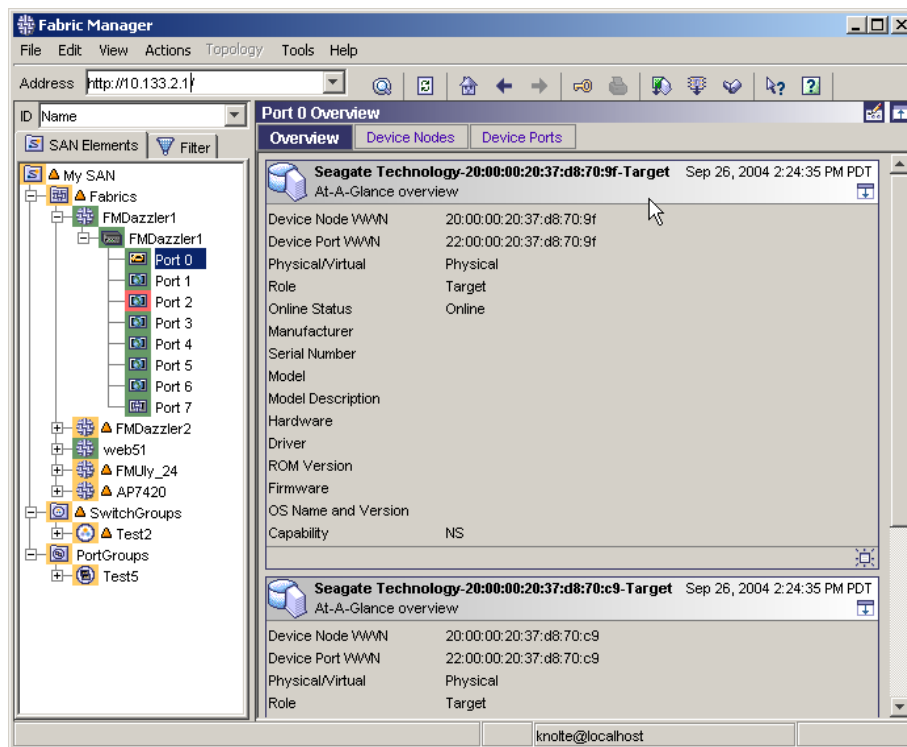




Figure 66 Device At-A-Glance window

Table 17 Device At-A-Glance icons

Icon	Name	Description
	Expand List	Expands the list within the At-A-Glance window to reveal additional information. Located in the header of the At-A-Glance window.
	Update	Updates the information in the displayed window.

SwitchGroups At-A-Glance windows

Table 18 describes the functional icons displayed in each Switchgroup At-A-Glance window when you select the Switchgroups node from within the SAN Elements tab. The element icons (see Figure 60 on page 81) are displayed in the lower-left corner of the At-A-Glance window and are for informational purposes only.

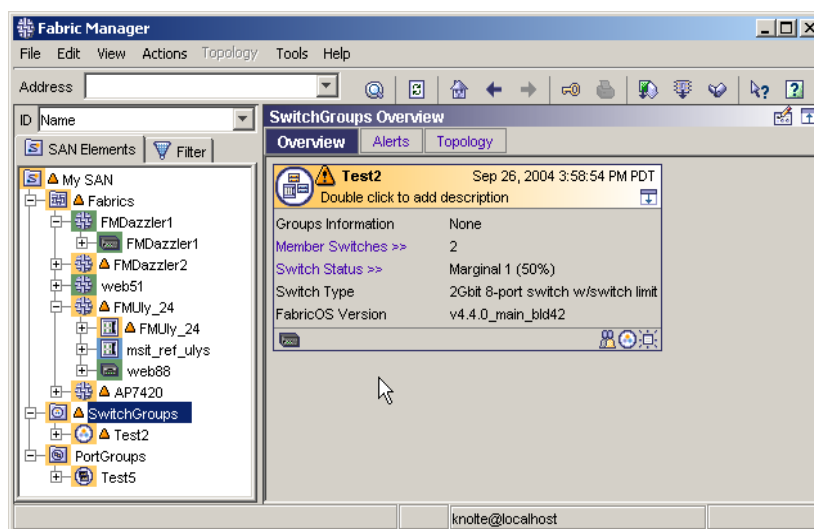






Figure 67 SwitchGroups At-A-Glance window

Table 18 SwitchGroups At-A-Glance icons

Icon	Name	Description
	Expand List	Expands the list within the At-A-Glance window to reveal additional information. Located in the header of the At-A-Glance window.
	Group Events	Opens Events view (see "Events view" on page 107) for the switch in a new Fabric Manager window.
	Group Creation	Opens the Edit Switch Group window. See Chapter 3, "Fabric management" for additional information.
	Update	Updates the information in the displayed window.

PortGroups At-A-Glance windows

Table 19 describes the functional icons displayed in each Portgroup At-A-Glance window (Figure 68) when you select the Portgroups node from within the SAN Elements tab. The element icons (see Figure 60 on page 81) are displayed in the lower-left corner of the At-A-Glance window and are for informational purposes only.

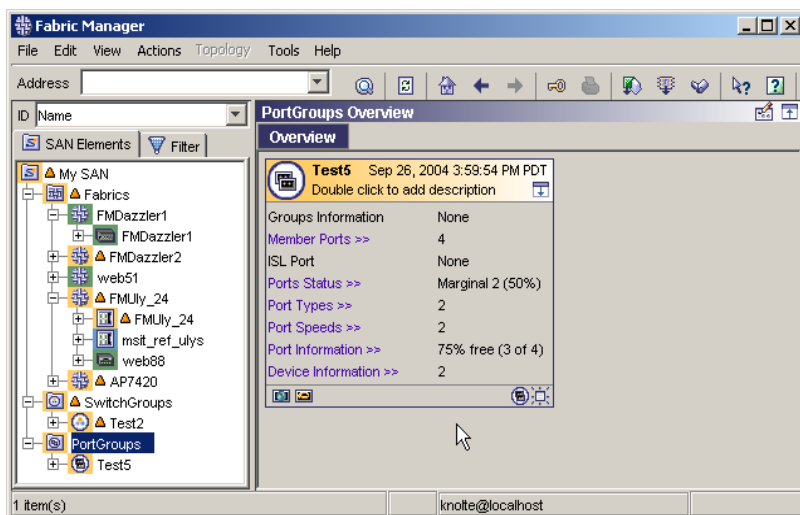





Figure 68 PortGroups At-A-Glance window

Table 19 PortGroups At-A-Glance icons

Icon	Name	Description
	Expand List	Expands the list within the At-A-Glance window to reveal additional information. Located in the header of the At-A-Glance window.
	Group Creation	Opens the Edit Port Group window. See Chapter 3, “Fabric management” for additional information.
	Update	Updates the information in the displayed window.

Alerts view

The Alerts view (see Figure 69) displays all the alerts that you configured to be generated by Fabric Manager. Switch status, switch unreachable, Change Management triggered alerts, and alerts from Performance Monitoring (Port Statistics and End-to-End) are displayed in the Alerts View. Table 20 provides a description of the Alerts view.

You can customize the information that is displayed in the Alerts view. To customize the view options, see [“Customizing views”](#) on page 121.

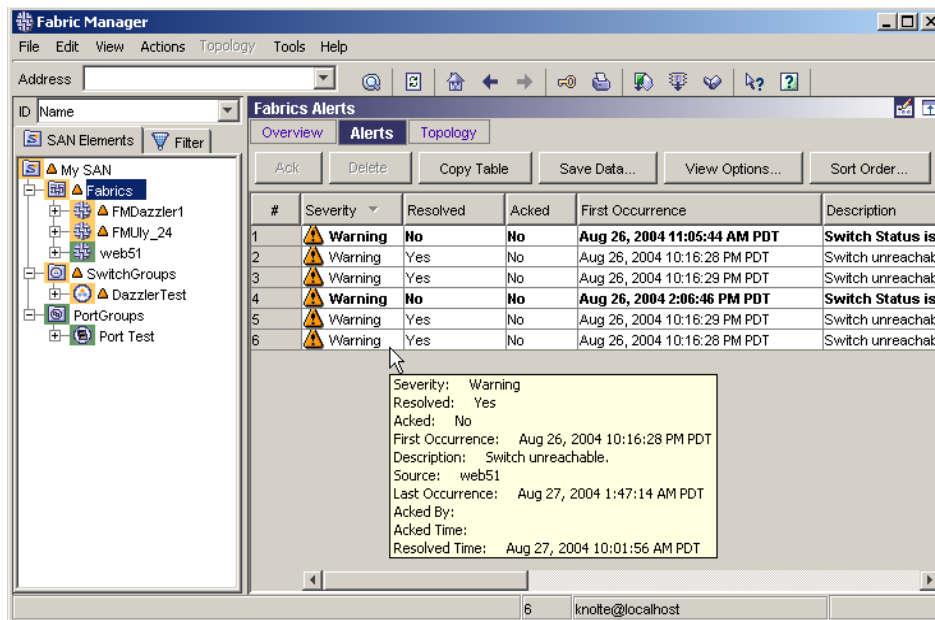


Figure 69 Alerts view



NOTE: Place your cursor in any row in [Figure 69](#) and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry).

Table 20 Description of Alerts view window

Column or button	Description
#	Row number; this column makes it easier to sort table information.
Severity	Identifies the alert severity.
Resolved	Identifies the resolution status of the alert.
Acked	Indicates the acknowledgement status of the alert.
First Occurrence	Identifies the time of the first occurrence of the alert.
Description	Describes the alert type.
Source	Identifies the source of the alert.
Last Occurrence	Identifies the time of the last occurrence of the alert.
Acked By	Identifies the user ID of the user who acknowledged the alert.
Acked Time	Identifies the time the alert was acknowledged.
Resolved Time	Identifies the time the alert was resolved.
Ack button	Click to acknowledge an alert.

Table 20 Description of Alerts view window (continued)

Column or button	Description
Delete button	Click to delete an alert.
Copy Table button	Copies the entire table automatically to your clipboard. You can then paste it into an application that uses tab-delimited cell and/or return-delimited row format.
Save Data button	You can save a table to a tab-delimited file with this option.
View Options button	Opens the Edit View Options for X window (where X represents the current active view) to customize the Fabric Manager display. You can choose to add or delete items from the current view.
Sort Order button	Opens the Edit Sort Order dialog box which allows you to sort the order of the columns displayed in the table.

Topology view

The Topology view (see [Figure 70](#)) provides a graphical representation of the elements that Fabric Manager monitors and all of their connections.



NOTE: Depending on the size of your fabric, the Topology view may open and respond slowly.

Each Topology view consists of nested windows and element icons. Element icons that contain other elements (for example, a fabric containing switches) include an expand (+) icon in the top-left corner. If you expand the icon, the icon becomes a window that displays the nested icons. Windows include a collapse icon (-) in the top-left corner so you can hide the subordinate icons.

In addition to the standard icons (see [Table 8](#) on page 72) that are displayed in each view within Fabric Manager, the Topology view includes its own set of icons, as described in [Table 21](#). See [Chapter 8, “Topology management”](#) for additional information about working with the Topology view in Fabric Manager.

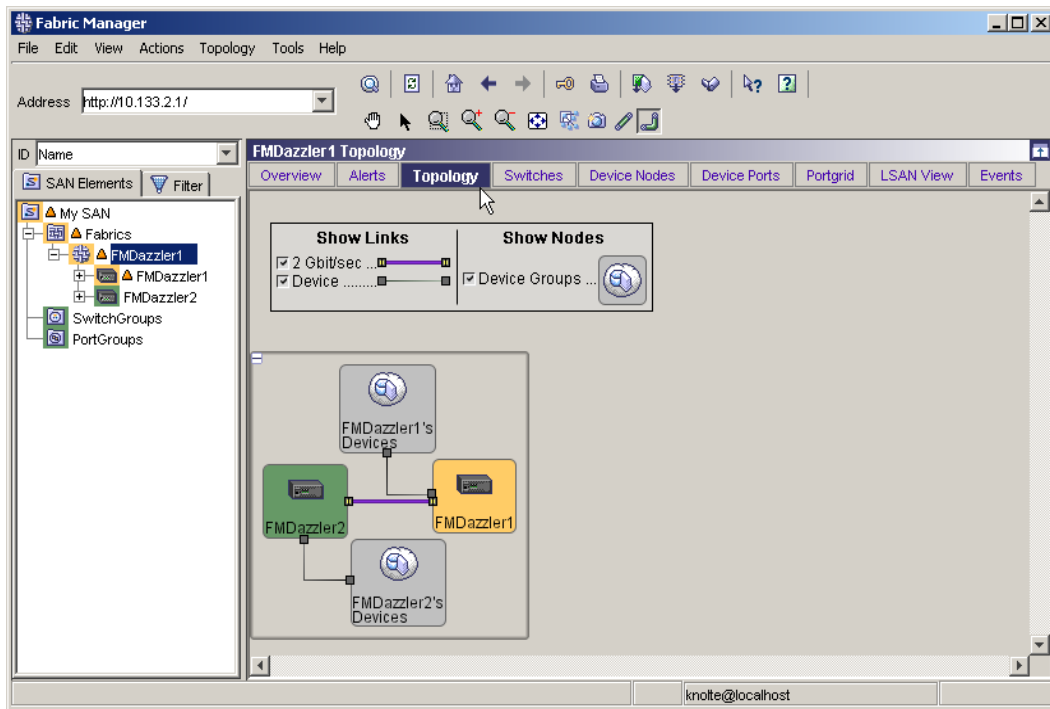












Figure 70 Topology view

Table 21 Topology view icons

Icon	Name	Description
	Pan	Clicks and drags the Topology view in any direction to see different portions of the fabric topology.
	Select	Moves nodes within the Topology view.
	Zoom in rectangle	Clicks and drags to zoom in on a particular rectangular region of the topology.
	Zoom in	Click to zoom in.
	Zoom out	Click to zoom out.
	Fit to view	Click to fit the entire topology in your Fabric Manager window.
	Overview	Opens a new window that displays the entire topology in miniature.
	Snap Shot	Takes a screen shot of your topology graph that you can save in .png format.
	Straight Link Style	Arranges links so they connect in a straight line from one element to another.
	Orthogonal Link Style	Arranges links in horizontal and vertical lines, with right angles, to connect elements.

Switches view

The Switches view (see [Figure 71](#)) provides a complete description of each switch in the selected fabric. [Table 22](#) describes the information displayed in the Switches view.

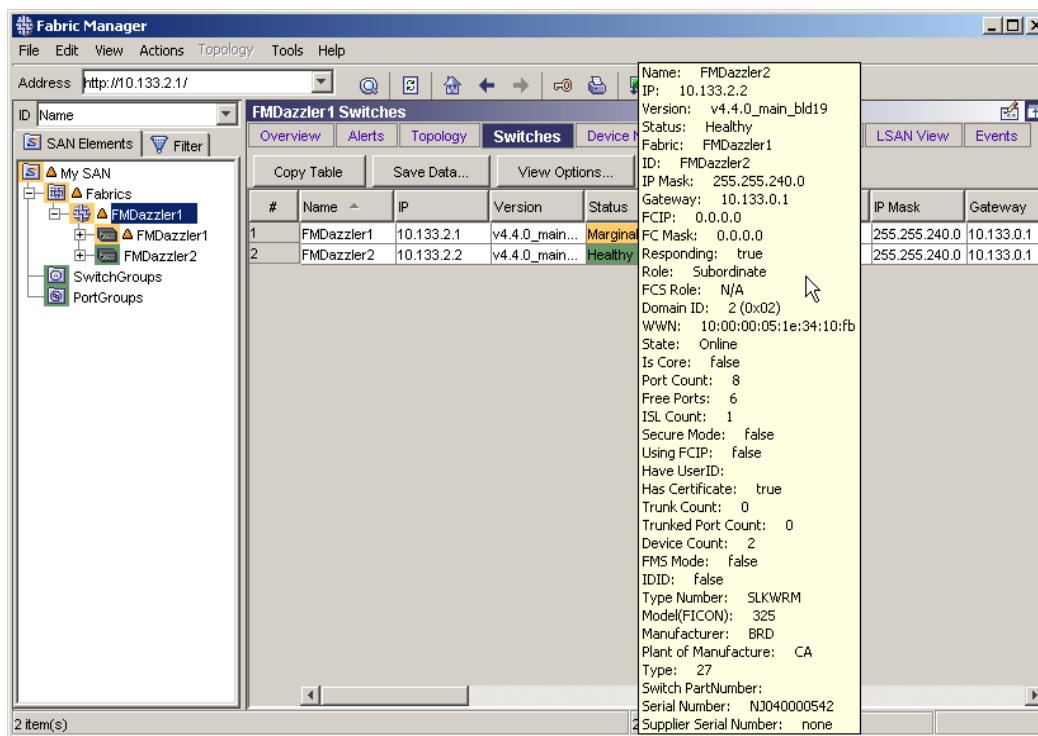


Figure 71 Switches view



NOTE: Place your cursor in any row in the Switches view and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry).

Table 22 Description of Switches view

Property	Description
Name	Displays the name of the switch.
IP	Displays the IP address of the switch.
Version	Displays the version of the Fabric OS that the switch is running.
Status	Displays the status of the switch.
Fabric	Displays the fabric the switch is connected to.
ID	Displays the ID that you selected from the ID menu. See “Displaying SAN elements by IP address, domain ID, WWN, and name” on page 124 for additional information.
IP Mask	Displays the subnet mask of the switch.

Table 22 Description of Switches view (continued)

Property	Description
Gateway	Displays the gateway of the switch.
FCIP	Displays the FC IP address of the switch (if configured).
FC Mask	Displays the FC mask of the switch (if configured).
Responding	Displays false if Fabric Manager is unable to communicate with the switch (the switch icon is also displayed with a blue color). Displays true if Fabric Manager is able to communicate with the switch.
Role	Displays the role that the switch plays in the fabric (principal or subordinate).
FCS Role	Displays the role that the switch plays in a secure fabric. Values are Backup, Primary, and Non-FCS. For nonsecure fabrics, value is N/A.
Domain ID	Displays the domain ID of the switch.
WWN	Displays the WWN of the switch.
State	Displays the status of the switch (online or off).
Is Core	Displays if the switch is a core switch (true) or an edge switch (false). See "Designating a core switch" on page 134 for additional information.
Port Count	Displays the number of ports in the switch.
Free Ports	Displays the number of unused and available ports in the switch.
ISL Count	Displays the number of ISLs (E_Ports) connected to the switch.
Secure Mode	Displays whether Secure mode is enabled (true) or disabled (false).
Using FCIP	Specifies whether the switch is configured for FCIP (true or false).
Have UserID	Specifies whether any user information has been added to a switch. Provides fabric login (flogi) status.
Has Certificate	Specifies whether a security certificate is installed (true or false).
Trunk Count	Displays the number of trunks that connect to the switch.
Trunked Port Count	Displays the number of ports in each trunk that connects to the switch.
Device Count	Displays the number of devices that connect to the switch.
FMS Mode	Identifies if FICON Management Server (FMS) mode is unsupported, enabled (true), or disabled (false) on the switch.
IDID	Specifies whether Insistent Domain ID Mode (IDID Mode) is enabled (true) or disabled (false).
Type Number	Displays a string that represents switch type. These values come from the switch RNID database and are available for FICON capable switches.

Table 22 Description of Switches view (continued)

Property	Description
Model (FICON)	Displays the switch model number.
Manufacturer	Displays the switch manufacturer.
Plant of Manufacture	Displays the plant of manufacture.
Type	Displays the switch type.
Switch Part Number	Identifies the chassis part number, for applicable switches.
Serial Number	Identifies the switch serial number.
Supplier Serial Number	Displays the supplier serial number.
Copy Table button	Copies the entire table to your clipboard. You can then paste it into an application that uses tab-delimited cell and/or return-delimited row format.
View Options button	Opens the Edit View Options for X window (where X represents the current active view) to customize the Fabric Manager display. You can choose to add or delete items from the current view.
Save Data button	You can save a table to a tab-delimited file with this option.
Sort Order button	Opens the Edit Sort Order dialog box, which allows you to sort the order of the columns displayed in the table.

Ports view

The Ports view (see [Figure 72](#)) provides detailed information on every port in the switch you select from the SAN Elements tab. [Table 23](#) describes the details that appear in the Ports view.

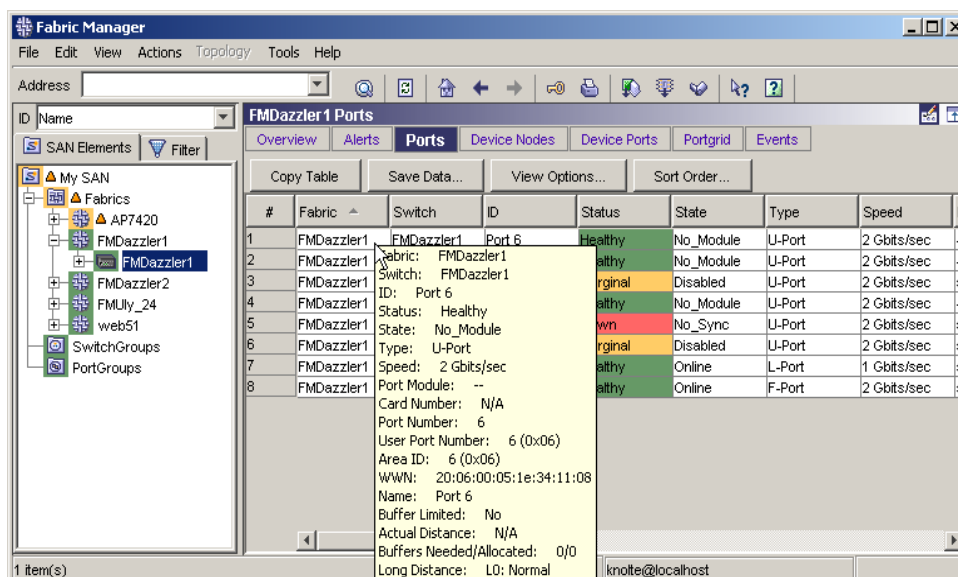


Figure 72 Ports view



NOTE: Place your cursor in any row in Ports view and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry).

Table 23 Description of Ports view

Property	Description
#	Row number; this column makes it easier to sort table information.
Fabric	Displays the name of the fabric that has the port.
Switch	Displays the name of the switch that has the port.
ID	Displays the port ID.
Status	Displays the status of the port. The background color of the status fields also change to reflect the port status visually. See Table 8 on page 72 for additional information.
State	Displays the state of the port module.
Type	Displays the port type.
Speed	Displays the speed of the port in Gbps.
Port Module	Displays if the port is copper or fiber.
Card Number	Identifies the card that has the port in a dual-switch chassis.
Port Number	Displays the port number.
User Port Number	Displays the number of the port in the switch (variable).

Table 23 Description of Ports view (continued)

Property	Description
Area ID	Displays the area ID of the port.
WWN	Displays the WWN of the port.
Name	Displays the name that you assigned to the port with Fabric Manager. See "Renaming a port" on page 127 for additional information.
Buffer Limited	Specifies whether a port is buffer limited (Yes, No, or N/A).
Actual Distance	Displays the actual distance.
Buffers Needed/Allocated	Specifies the number of buffers needed and the number currently allocated.
Long Distance	Specifies the long-distance setting as follows: <ul style="list-style-type: none"> • L0: normal • LE: <= 10km • L0.5; <= 25km • LS: <= 300km
Copy Table button	Copies the entire table automatically to your clipboard. You can then paste it into an application that uses tab-delimited cell and/or return-delimited row format.
View Options button	Opens the Edit View Options for X window (where X represents the current active view) to customize the Fabric Manager display. You can choose to add or delete items from the current view.
Save Data button	Saves a table to a tab-delimited file.
Sort Order button	Opens the Edit Sort Order dialog box, which allows you to sort the order of the columns displayed in the table.

Device Ports view

The Device Ports view (see [Figure 73](#)) lists the device ports attached to the selected element within the SAN Elements tab. [Table 24](#) describes the properties displayed by the Device Ports view.

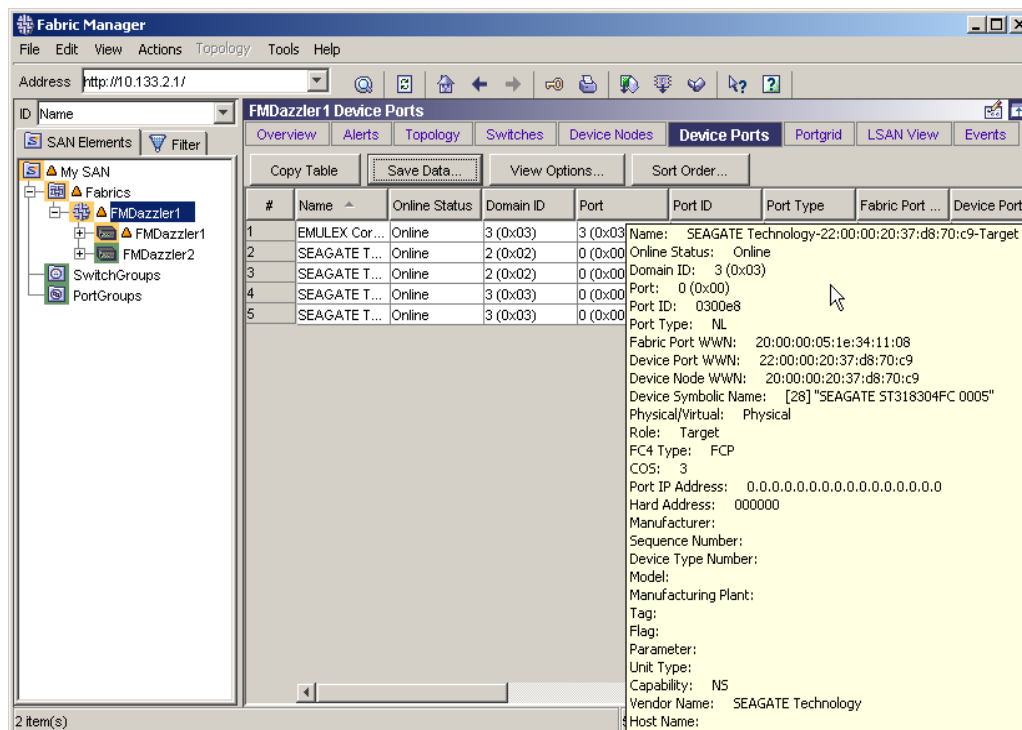


Figure 73 Device Ports view



NOTE: Place your cursor in any row in the Device Ports view and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry).

Table 24 Description of Device Ports view

Column or button	Description
#	Row number; this column makes it easier to sort table information.
Name	Displays up to three items (left-to-right): vendor name, device port WWN, and role. For example, XXX Company-10:00:00:00:c9:29:b4:03-Initiator (the vendor name is not always collected/displayed). However, if you use the Import Device Node/Port Names wizard (from the Tools menu), and the wizard finds a zoning alias with the same port WWN, the alias is imported instead. See "Renaming a device node and device port" on page 127 for additional information.
Online Status	Displays the status of the device port (online or off).
Domain ID	Identifies the domain ID.
Port	Identifies the port on the device.
Port ID	Identifies the port ID in hexadecimal format.
Port Type	Identifies the port type.

Table 24 Description of Device Ports view (continued)

Column or button	Description
Fabric Port WWN	Identifies the fabric port WWN.
Device Port WWN	Identifies the device port WWN.
Device Node WWN	Identifies the device node WWN.
Device Symbolic Name	Identifies the symbolic device name.
Physical/Virtual	Identifies the device port as <i>Physical</i> or <i>Virtual</i> .
Role	Identifies the role as Target, Initiator, Both, or Unknown. In the Device Ports view, the Role column displays information only for switches running versions of the Fabric OS later than v3.2.0x or v4.2.0x. If you have an unknown switch or director, or a switch or director running a version of Fabric OS earlier than v3.2.0x or v4.2.0x, the value for the Role column in the Device Ports view is displayed as Unknown.
FC4 Type	Identifies the FC4 type.
COS	Identifies the class of service.
Port IP Address	Identifies the port IP address.
Hard Address	Identifies the hard address.
Manufacturer	Identifies the manufacturer of the device.
Sequence Number	Identifies the sequence number.
Device Type Number	Identifies the device type number.
Model	Identifies the model number.
Manufacturing Plant	Identifies the manufacturing plant of the device.
Tag	Identifies the device tag.
Flag	Specifies whether the node is valid, not valid, or not current.
Parameter	Displays the incident node parameters type, in bytes.
Unit Type	Describes Flag and Parameter values.
Capability	Identifies the device capability.
Vendor Name	Displays the name of the device vendor. This name is derived from the device WWN.
Host Name	Displays the name of the host from which the device originates (applies only to FDMI-1 standard devices).

Table 24 Description of Device Ports view (continued)

Column or button	Description
Copy Table button	Copies the entire table automatically to your clipboard. You can then paste it into an application that uses tab-delimited cell and/or return-delimited row format.
Save Data button	Saves a table to a tab-delimited file.
View Options button	Opens the Edit View Options for X window (where X represents the current active view) to customize the Fabric Manager display. You can choose to add or delete items from the current view.
Sort Order button	Opens the Edit Sort Order dialog box, which allows you to sort the order of the columns displayed in the table.

Device Nodes view

The Device Nodes view (see [Figure 74](#)) lists the devices attached to the selected element within the SAN Elements tab. [Table 25](#) lists the properties displayed in the Devices Nodes view.

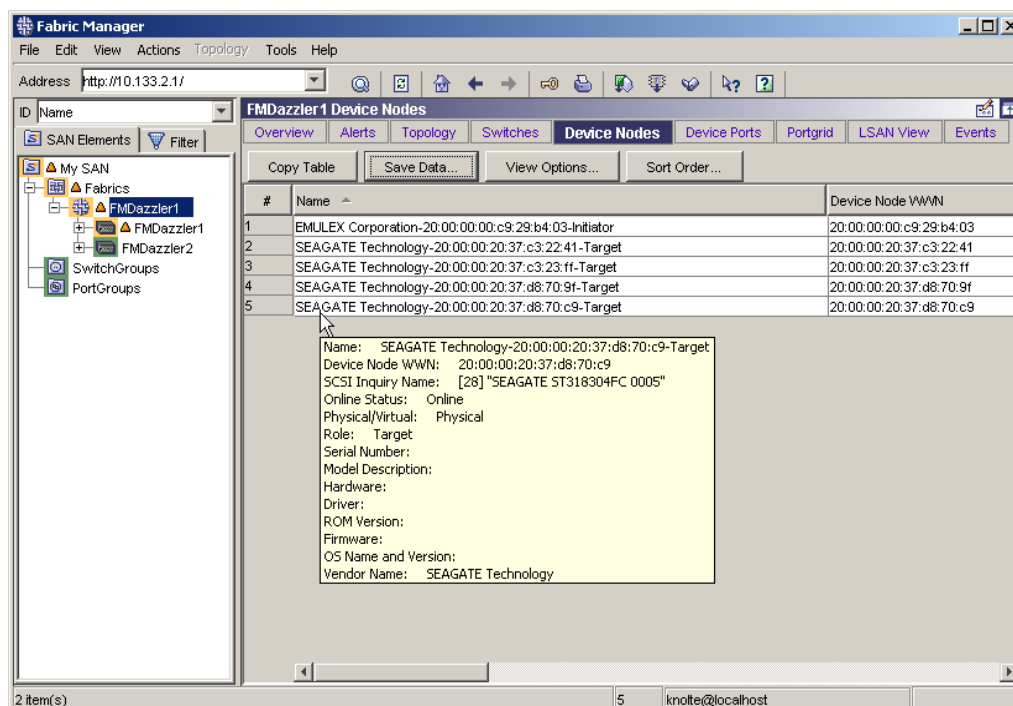


Figure 74 Device Nodes view



NOTE: Place your cursor in any row in Device Nodes view and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry).

Table 25 Description of Device Nodes view

Column or button	Description
Name	Displays up to three items (left-to-right): vendor name, device node WWN, and role. For example, XXX Company-10:00:00:00:c9:29:b4:03-Initiator (the vendor name is not always collected or displayed). However, if you use the Import Device Node/Port Names wizard (from the Tools menu), and the wizard finds a zoning alias with the same node WWN, the alias is imported instead. See "Renaming a device node and device port" on page 127 for additional information.
Device Node WWN	Displays the WWN of the device.
SCSI Inquiry Name	Displays the SCSI inquiry name of the device. The SCSI inquiry name serves as the symbolic SCSI name of the device. If the device does not have a SCSI inquiry name, this table entry is blank.
Online Status	Displays the device status. Values are Online, Offline, and Partially Offline.
Physical/Virtual	Identifies the device as Physical or Virtual.
Role	Identifies the role as Target, Initiator, Both, or Unknown. In the Device Nodes view, the Role column displays information only for switches running versions of the Fabric OS later than v3.2.0x or v4.2.0x. If you have an unknown switch or director, or a switch or director running a version of Fabric OS earlier than v3.2.0x or v4.2.0x, the value for the Role column in the Device Nodes view is displayed as Unknown.
Serial number	Displays the serial number of FDMI-capable HBAs.
Model Description	Displays a description of an FDMI-capable device.
Hardware	Displays an internal identifier of the FDMI-capable HBA manufacturer.
Driver	Displays the driver running on the host for that HBA.
ROM version	Specifies the ROM version on the HBA.
Firmware	Displays the firmware that the HBA is running.
OS name and version	Displays the OS of the device where the HBA is installed.
Vendor Name	Displays the name of the device vendor. This name is derived from the device WWN.
Copy Table button	Copies the entire table to your clipboard. You can then paste it into an application that uses tab-delimited cell and/or return-delimited row format.
Save Data button	Saves a table to a tab-delimited file.

Table 25 Description of Device Nodes view (continued)

Column or button	Description
View Options button	Opens the Edit View Options for X window (where X represents the current active view) to customize the Fabric Manager display. You can choose to add or delete items from the current view.
Sort Order button	Opens the Edit Sort Order dialog box, which allows you to sort the order of the columns displayed in the table.

Portgrid view

The Portgrid view displays which ports connect to which devices for each switch (see [Figure 75](#)). The Portgrid view works only when you click MySAN, Fabrics, or a specific fabric or switch in the SAN Elements tab. If a device has a SCSI Inquiry Name, the Portgrid view displays it. If there is no SCSI Inquiry Name provided, the Portgrid view displays the WWN. For loop devices, the Portgrid view displays the Loop and the number of devices in the loop (see [Table 26](#)).

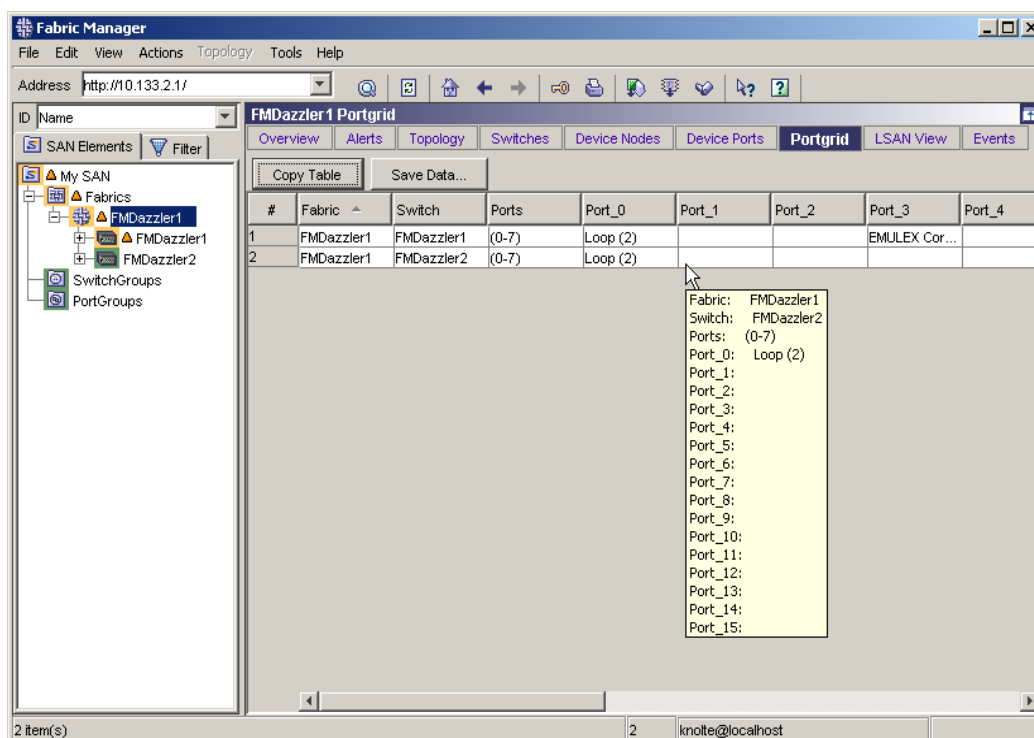


Figure 75 Portgrid view



NOTE: Place your cursor in any row in Portgrid view and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry).

Table 26 Description of Portgrid view

Property or button	Description
#	Row number; this column makes it easier to sort table information.
Fabric Name	Identifies the fabric.
Switch Name	Identifies the switch.
Number of Active Ports	Lists the number of active ports in the switch. For example, in Figure 75 , the switch has 16 ports, but only 8 are licensed or active.
Port Number	Within each Port_X column (where X identifies the port number) the device connected to that port is named.
Copy Table button	Copies the entire table to your clipboard. You can then paste it into an application that uses tab-delimited cell and/or return-delimited row format.
Save Data button	Saves a table to a tab-delimited file.

LSAN view

The LSAN view (see [Figure 76](#)) is only displayed when a fabric being monitored by Fabric Manager has an MP Router. [Table 27](#) describes the LSAN view. See [Chapter 18, "MP Router administration"](#) for additional information.

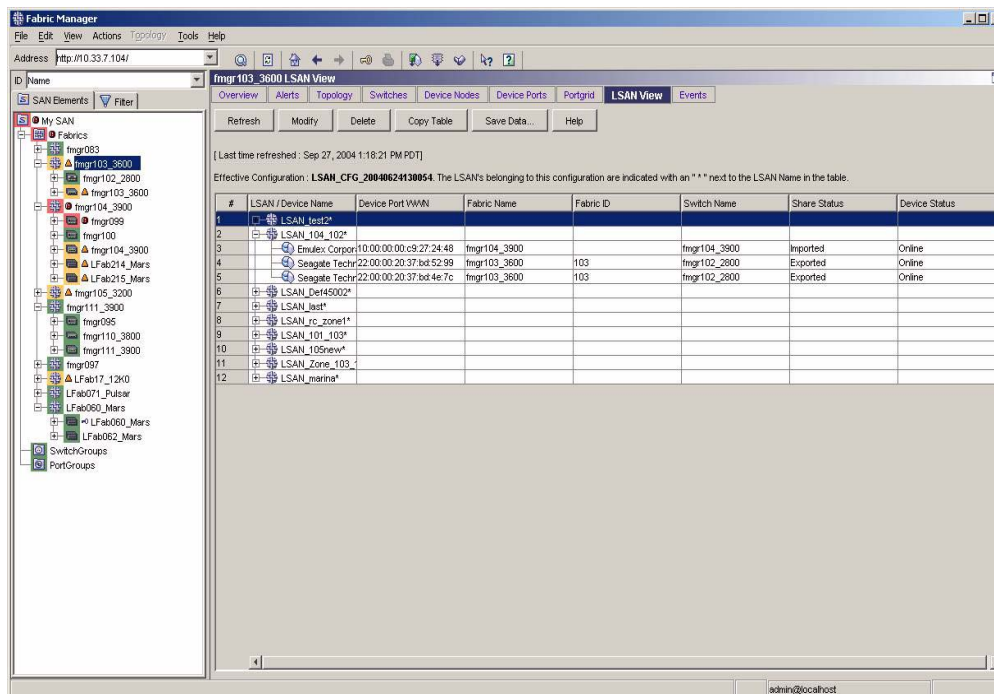


Figure 76 LSAN view



NOTE: Place your cursor in any row in LSAN view and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry).

Table 27 Description of LSAN view

Property or button	Description
#	Row number; this column makes it easier to sort table information.
Device Name	Displays up to three items (left-to-right): Vendor name, device WWN, and role. For example, XXX Company-10:00:00:00:c9:29:b4:03-Initiator (the vendor name is not always collected or displayed). However, if you use the Import Device Node/Port Names wizard (from the Tools menu), and the wizard finds a zoning alias with the same device WWN, the alias is imported instead. See "Renaming a device node and device port" on page 127 for additional information.
Device Port WWN	Identifies the port WWN.
Fabric Name	The name of the edge fabric that contains the device. If the device is not part of any discovered fabric, this column is blank.
Fabric ID	The fabric ID of the edge fabric that contains the device. If the device is not part of any discovered fabric, this column is blank.
Switch Name	The name of the switch in the edge fabric to which the device is connected. If the device is not part of any discovered fabric, this column is blank.
Device Status	Status of the device as either Online or Offline.
Device Status	Provides the device status.
Refresh button	Click to refresh the displayed information.
Modify button	Click to modify the LSAN.
Delete button	Click to delete the selected LSAN.
Copy Table button	Copies the entire table to your clipboard. You can then paste it into an application that uses tab-delimited cell and/or return-delimited row format.
Save Data button	Saves a table to a tab-delimited file.
Help button	Provides online help for working with the MP Router.

LSAN Info View

The LSAN Info view is available only when you select an MP Router from the SAN Elements tab. It has three tabs: Physical Device (see [Figure 77](#) and [Table 28](#)), Virtual Devices (see [Figure 78](#) on page 105 and [Table 29](#) on page 105), and LSAN Information (see [Figure 79](#) on page 106 and [Table 30](#) on page 106). The Physical Devices tab displays information about the physical devices attached to the router. The Virtual Devices tab displays information about the proxy devices created by the router. The LSAN Information tab displays information about the selected LSAN. See [Chapter 18, "MP Router administration"](#) for additional information.

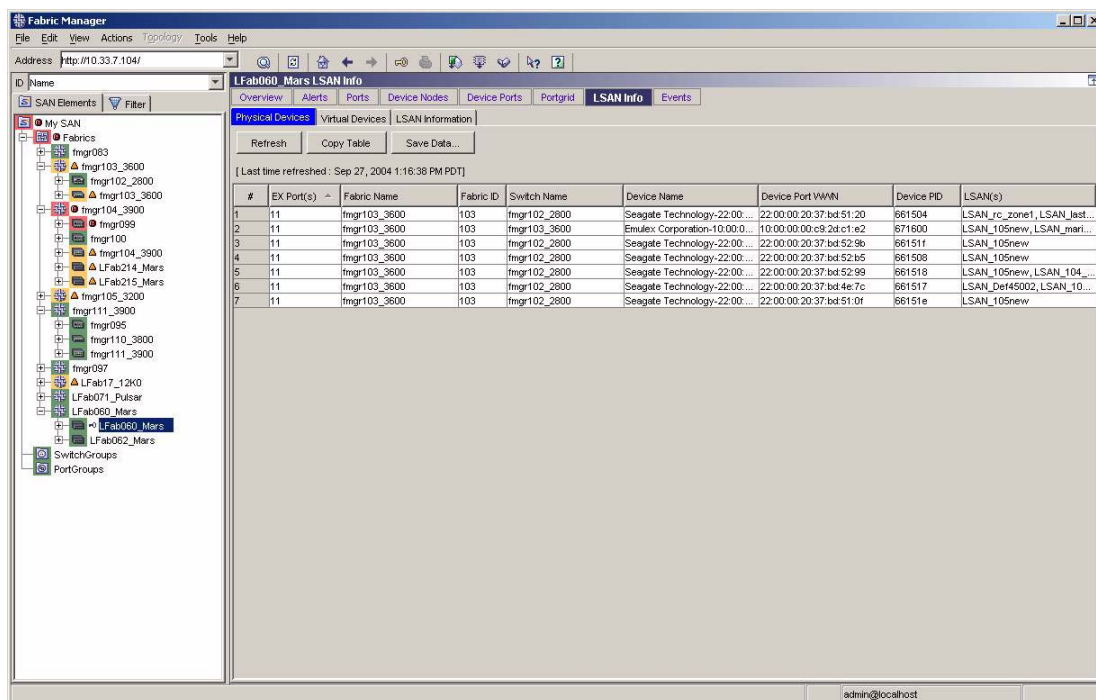


Figure 77 LSAN Info (physical device) view



NOTE: Place your cursor in any row in LSAN Info view and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry).

Table 28 Description of LSAN Info (physical devices)

Property	Description
#	Row number; this column makes it easier to sort table information.
EX Ports	Ports on the router to which the edge fabric is connected.
Fabric Name	The fabric name that has the physical devices.
Fabric ID	The fabric ID that has the physical devices.
Device Name	The device's name.
Device Port WWN	The device port WWN.
Device PID	The device port ID.
LSANs	Identifies LSANs that have the physical devices.
Refresh button	Click to refresh the displayed information.
Copy Table button	Copies the entire table to your clipboard. You can then paste it into an application that uses tab-delimited cell and/or return-delimited row format.
Save Data button	Saves a table to a tab-delimited file.

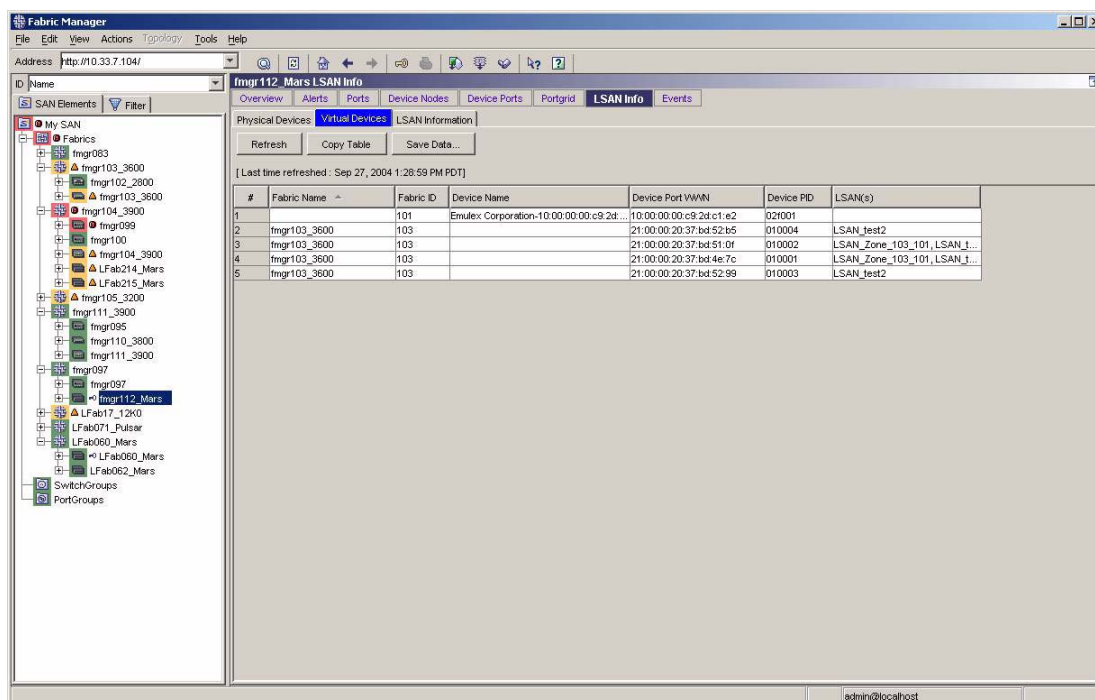


Figure 78 LSAN Info (virtual devices) view



NOTE: Place your cursor in any row LSAN Info view and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry).

Table 29 Description of LSAN Info (virtual devices) view

Property	Description
#	Row number; this column makes it easier to sort table information.
Fabric Name	The fabric name that has the virtual devices.
Fabric ID	The fabric ID that has the virtual devices.
Device Name	The device's name.
Device Port WWN	The device port WWN.
Device PID	The device port ID.
LSANs	Identifies which LSANs the virtual devices belong to.
Refresh button	Click to refresh the displayed information.
Copy Table button	Copies the entire table automatically to your clipboard. You can then paste it into an application that uses tab-delimited cell and/or return-delimited row format.
Save Data button	Saves a table to a tab-delimited file.

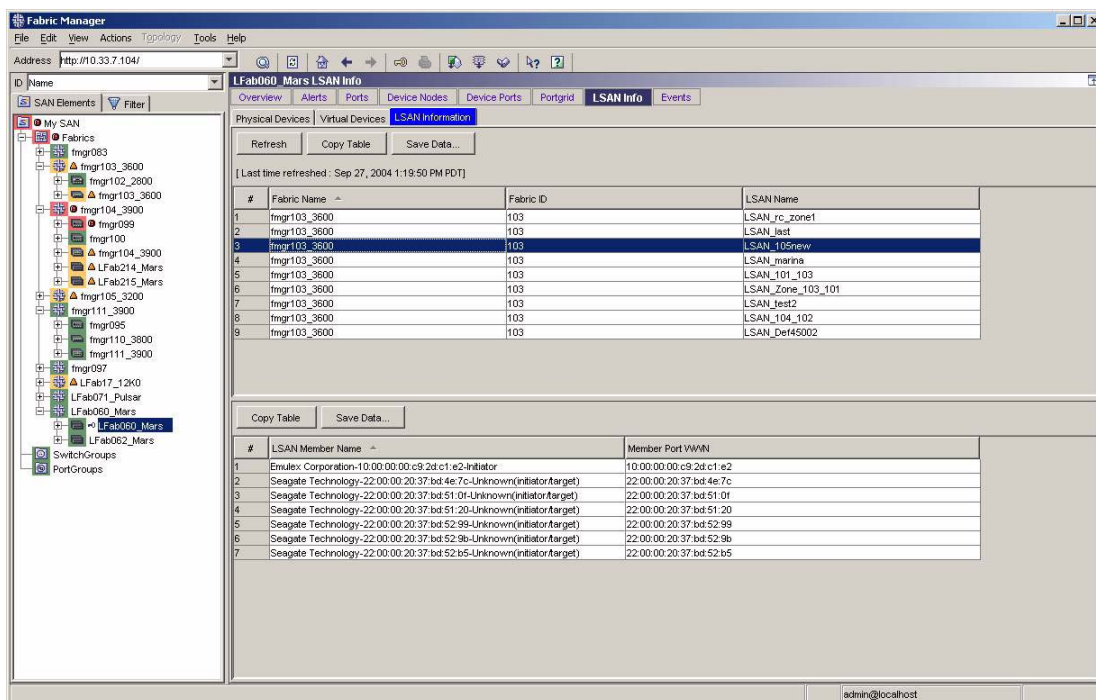


Figure 79 LSAN Info (information) view



NOTE: Place your cursor in any row in the LSAN information view and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry).

Table 30 Description of LSAN Info (information) view

Property	Description
#	Row number; this column makes it easier to sort table information.
Fabric Name	Identifies the fabric name that has the LSAN.
Fabric ID	Identifies the fabric ID that has the LSAN.
LSAN Name	Identifies the LSAN name.
LSAN Member Name	Identifies the LSAN member name.
Member Port WWN	Identifies the member port WWN.
Refresh button	Click to refresh the displayed information.
Copy Table button	Copies the entire table automatically to your clipboard. You can then paste it into an application that uses tab-delimited cell and/or return-delimited row format.
Save Data button	You can save a table to a tab-delimited file with this option.

Events view

The Events view (see [Figure 80](#)) provides a list of events for the element selected from within the SAN Elements tab. [Table 31](#) describes the Events view.

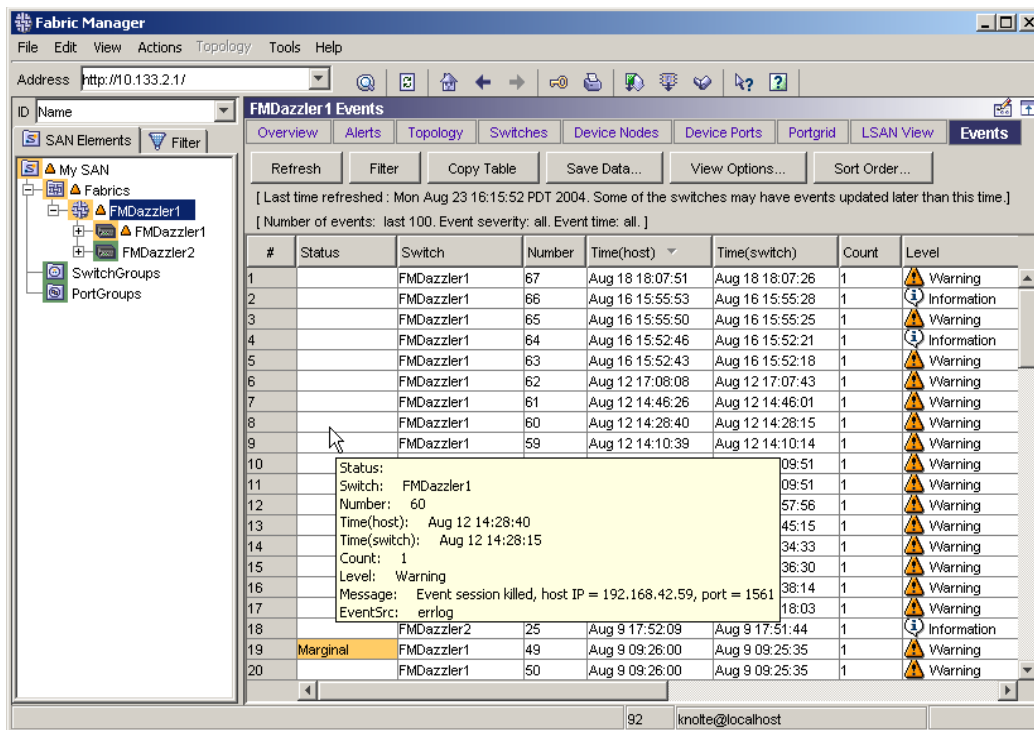


Figure 80 Events view

NOTE: Place your cursor in any row in Events view and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry).

Table 31 Description of the Events view

Property	Description
Status	Displays the switch status that the event triggered.
Switch	The switch that experienced the event.
Number	The number of the event. Events are numbered sequentially based on the time that they occurred.
Time (host)	The time (on a host) that the event occurred.
Time (switch)	The time on the switch when the event occurred.
Count	The number of consecutive occurrences of the same event.

Table 31 Description of the Events view (continued)

Property	Description
Level	The severity level of the event as follows: <ul style="list-style-type: none"> • Critical • Error • Warning • Informational
Message	Description of the event that occurred. Fabric Manager takes this description from the error log of the switch.
EventSrc	The event source (as a daemon or library module). The possible event sources are: BLADE, BLOOM, DIAG, EM, ERRLOG, FABRIC, FICON, FSSME, FW, HAM, HAMKERNEL, MS, PD TRACE, PORTSWAP, RCS, SULIB, SYSC, TRACK, TS, ZONE, kSWD, and syslog
Refresh button	Click to refresh the displayed information.
Filter button	Select filters to apply on events (such as filtering by number, severity, or time).
Copy Table button	Copies the entire table to your clipboard. You can then paste it into an application that uses tab-delimited cell and/or return-delimited row format.
Save Data button	Saves a table to a tab-delimited file.
View Options button	Opens the Edit View Options for X window (where X represents the current active view) to customize the Fabric Manager display. You can choose to add or delete items from the current view.
Sort Order button	Opens the Edit Sort Order dialog box, which allows you to sort the order of the columns displayed in the table.

Actions menu

The Actions menu displays tasks that you can perform with Fabric Manager. The items available to you in the Actions menu are dependent on the item you select from the SAN Elements tab. [Table 32](#) lists and describes the Actions menu items available to you when you select a fabric, switch, port, switchgroup, or portgroup from the SAN Elements tab.

Table 32 Action menu (fabric, switch, port, switchgroups, and portgroups) descriptions

Action	Description
Fabric Actions	
Events	Opens the Events View (see Figure 80 on page 107). See Chapter 12 , “ Event monitoring ” for additional information.
Telnet to FCS	Launches a SecTelnet window. This option is available only for any secure fabrics listed in the SAN Elements tab. See Chapter 16 , “ Security administration ” for additional information.

Table 32 Action menu (fabric, switch, port, switchgroups, and portgroups) descriptions (continued)

Action	Description
Telnet	Launches a Telnet window. This option is available for any non-secure fabrics listed in the SAN Elements tab. See "Opening a telnet session for a nonsecure switch" on page 134 for additional information.
Supportshow	Allows you to save supportshow command information to a file (.zip) for troubleshooting purposes. See Chapter 20, "Troubleshooting" for additional information.
MP Router configuration	Launches the FC Router configuration module (see Figure 197 on page 310. See Chapter 18, "MP Router administration" for additional information.
Security	Allows you to enable or disable security on a fabric, manage security policies, and merge secure fabrics. See Chapter 16, "Security administration" for additional information.
Zone Admin	Launches the Zone Administration window (see Figure 150 on page 239) of Web Tools. See Chapter 15, "Zone administration" for additional information.
Name Server	Launches the Name Server Table window in Web Tools (see Figure 110 on page 167). See Chapter 7, "Name Server" for additional information.
Set Time	Opens the Time dialog box to update the time and date settings on the switches in the fabric. To configure the time, place your cursor in any part of the Time field and use the up arrow or down arrow to iterate the field, then click OK . See "Filtering elements" on page 125 for additional information.
Refresh FDMI Info	Refreshes FDMI information. This option appears only when FDMI-capable HBAs are connected to switches running Fabric OS versions that support FDMI (see "Downloading firmware to HBAs" on page 156 for additional information).
Refresh	Click to refresh the displayed information.
Performance Monitoring	Allows you to turn port history recording on or off, and when it is on, you can create custom reports, generate reports from templates, or access saved reports. See Chapter 19, "Performance monitoring" for additional information.
Delete	Deletes the selected fabric. See "Deleting a fabric" on page 120 for additional information.
Rename	Allows you to rename the selected fabric. See "Renaming a fabric" on page 120 for additional information.
Switch view	Opens the Switch View window of Web Tools.
Events	Opens the Events View in Fabric Manager (see Figure 80 on page 107). See Chapter 12, "Event monitoring" for additional information.

Table 32 Action menu (fabric, switch, port, switchgroups, and portgroups) descriptions (continued)

Action	Description
Admin	Opens the Switch Admin window of Web Tools.
Fabric Watch	Opens the Fabric Watch window of Web Tools (see Figure 118 on page 178). See Chapter 9 , “ Fabric Watch administration ” for additional information.
Health Report	Opens the Switch Health Report (see “ Displaying the switch health report ” on page 134). This option is available only to switches running Fabric OS v3.2/v4.4 or later.
Firmware Download	Opens the Firmware Download dialog box (see Figure 104 on page 154). See Chapter 5 , “ Firmware download administration ” for additional information.
Telnet	Launches a Telnet window to access the switch. See “ Opening a telnet session for a nonsecure switch ” on page 134 for additional information.
Close telnet	Closes a telnet session to the switch. This option is not available to switches running Fabric OS v4.x or later.
Supportshow	Allows you to save supportshow command information to a file (.zip) for troubleshooting. See Chapter 20 , “ Troubleshooting ” for additional information.
Port address configuration	Launches the Edit CUP Port Connectivity Configuration window (see Figure 202 on page 309). You can then edit the configurations you access (active or stored). See Chapter 19 , “ FICON and FICON CUP administration ” for additional information.
Refresh	Click to refresh the displayed information.
Disable and Enable	Disables or enables the switch. See “ Setting the log level ” on page 140 for additional information.
Core Switch	Automatically labels the selected switch as a core switch. This action impacts the location of the switch in Topology view for core edge layouts. See “ Designating a core switch ” on page 134 for additional information.
Delete	Deletes the switch from the switch group or deletes a switch that has the missing status from the fabric.
Rename	<p>Renames the switch in Fabric Manager. See “Renaming a switch” on page 126 for additional information.</p> <p>This feature is unavailable if you select a blade from the SAN Elements tab.</p>
Port actions	
Disable and Enable	Disables or enables the port. See “ Setting the log level ” on page 140 for additional information.
Delete	Deletes the port from Fabric Manager.

Table 32 Action menu (fabric, switch, port, switchgroups, and portgroups) descriptions (continued)

Action	Description
Rename	Renames the port in Fabric Manager. See "Renaming a port" on page 127 for additional information.
SwitchGroups actions	
Edit Switch groups	Opens the Edit Switch Groups dialog box (see Figure 96 on page 136). See "Editing a switch group" on page 138 for additional information.
SwitchGroup Actions	
Events	Opens the Events View in Fabric Manager (see Figure 80 on page 107). See Chapter 12 , "Event monitoring" for additional information.
Supportshow	Allows you to save supportshow command information to a file (.zip) for troubleshooting purposes. See Chapter 20 , "Troubleshooting" for additional information.
Refresh	Click to refresh the displayed information.
Disable/Enable	Disables or enables the switch group. See "Setting the log level" on page 140 for additional information.
Delete	Deletes the switch group from Fabric Manager.
Rename	Renames the switch group in Fabric Manager. See "Renaming a switch" on page 126 for additional information.
PortGroups actions	
Edit Port Groups	Launches the Edit Port Groups dialog box (see Figure 97 on page 138). See "Editing a port group" on page 140 for additional information.
PortGroup actions	
Disable/Enable	Disables or enables the port group. See "Setting the log level" on page 140 for additional information.
Delete	Deletes the port group from Fabric Manager.
Rename	Renames the port group in Fabric Manager. See "Renaming a port" on page 127 for additional information.

Topology menu

The Topology menu provides options to help you use and customize the Topology view (see [Figure 70](#) on page 91). You can only access the Topology menu after you open the Topology view. [Table 33](#) lists and describes Topology menu options. See [Chapter 8, "Topology management"](#) for additional information.

Table 33 Topology menu options

Option	Description
Layout	Opens the Layout submenu. You have the following choices: <ul style="list-style-type: none">• Circular, which arranges the switches and nodes of a fabric into a circle.• Core-Edge, which separates core switches, edge switches, and nodes.• Tree, which organizes the fabric hierarchically.• Clear Layout Changes, which reverts to the original layout. See Chapter 8, "Topology management" for additional information.
Links	Opens the Links submenu. You have the following choices for displaying the links in the Topology View: <ul style="list-style-type: none">• Expand all links• Collapse all links• Orthogonal link style• Straight link style
Overview	Opens a window that displays the entire topology in miniature. See Chapter 8, "Topology management" for additional information.
Snapshot	Takes a snapshot of your current topology so you can compare subsequent topologies to this baseline. See Chapter 8, "Topology management" for additional information.

Tools menu

The Tools menu serves as a toolbox of mini-applications to help you perform a variety of tasks. [Table 34](#) lists and describes the options in the Tools menu.

Table 34 Tools menu options

Option	Description
Firmware Download to Switches	Opens the Firmware Download to Switches window (see Figure 104 on page 154). Use this window to download firmware to multiple switches simultaneously. See Chapter 5, "Firmware download administration" for information on using this tool.
Firmware Download to HBAs	Opens the Firmware Download to HBAs window (see Figure 105 on page 157). Use this window to download firmware to one or more HBAs simultaneously. See Chapter 5, "Firmware download administration" for information on using this tool.

Table 34 Tools menu options (continued)

Option	Description
Reboot	<p>Opens the Reboot submenu. You have the following choices:</p> <ul style="list-style-type: none">• Create Reboot Sequence Opens the Create or Change Reboot Groups and Sequence window (see Figure 106 on page 162) where you can create and edit a reboot group and its reboot sequence.• Sequence Reboot Opens the Sequence Reboot window (see Figure 109 on page 165) where you can execute a reboot. <p>See Chapter 6, “Reboot administration” for information on using this tool.</p>
Configuration	<p>Opens the Configuration submenu. You have the following choices:</p> <ul style="list-style-type: none">• Save Baseline Opens the Save Baseline -- Configuration Template Selection dialog box (see Figure 125 on page 192) where you can begin to save the configuration file of a switch to a server. See “Saving a baseline configuration to a file” on page 192 for additional information.• Compare/Download from File Opens the Compare/Download from File -- Select Baseline Configuration window (see Figure 128 on page 194) where you can select a file to compare or download.• Compare/Download From Switch Opens the Compare/Download from Switch -- Source Configuration Selection window (see Figure 129 on page 195) where you can either select a switch configuration file for comparison purposes or download the configuration of that switch. See “Comparing switches to a baseline file” on page 194 for additional information.

Table 34 Tools menu options (continued)

Option	Description
Licensing	<p>Opens the Licensing submenu. You have the following choices:</p> <ul style="list-style-type: none"> • Import from File <p>Opens the Import License – Select license file dialog box where you can import license keys from a file, which you can then apply to one or more switches. Load from Switch</p> <p>Opens the License Admin – Switch Selection window (see Figure 101 on page 148).</p> <ul style="list-style-type: none"> • Generate Licenses <p>Opens the Create License Request – Select transaction key file or saved request window where you can obtain licenses and then apply them to switches later.</p> <ul style="list-style-type: none"> • Load Generated Licenses <p>Opens the License Admin – Switch Selection window (see Figure 101 on page 148) where you can open previously-saved license files and download them to switches.</p> <p>See Chapter 4, “License key administration” for information on generating licenses and loading licenses from a switch.</p>
Change Management	<p>Opens the Change Management submenu. You have the following choices:</p> <ul style="list-style-type: none"> • Manage Profiles <p>Opens the Change Management Profiles window (see Figure 133 on page 209) where you can edit, delete, or clone a profile, or you can launch the Change Management wizard to create a new profile.</p> <ul style="list-style-type: none"> • View Change Reports <p>Opens the Fabric Picker window (see Figure 139 on page 217) where you can select a fabric and then view the change reports.</p> <p>See Chapter 11, “Change management administration” for additional information on creating, editing, deleting, or cloning change management profiles and also viewing change reports.</p>
Fabric Merge	<p>Opens the Fabric Merge Check dialog box (see Figure 190 on page 305) to verify that you can merge two fabrics successfully. See Chapter 17, “Fabric merge check” for additional information on merging fabrics.</p>
Subnet Scan	<p>Opens the Subnet scan dialog box (see Figure 81 on page 118) where you can specify a subnet scan to discover available fabrics. See “Running a subnet scan (fabric scan)” on page 118 for additional information.</p>

Table 34 Tools menu options (continued)

Option	Description
Call Home	Opens the Call Home window (see Figure 145 on page 232) where you can configure call home scenarios and provide recipient e-mail addresses for notification purposes (via the Call Home wizard). See Chapter 14 , “ Configuring Call Home support ” for additional information.
Notification Configuration	Opens the Notification Configuration dialog box (see Figure 100 on page 143) where you can configure notification parameters for any Change Management and Call Home e-mail notifications on a global basis. See “ Configuring notification parameters ” on page 142 for additional information.
Alert Display Options	Opens the Alert Display Options window where you can specify the alert types that you want displayed in the fabric tree. The options are: <ul style="list-style-type: none">• Unacknowledged and unresolved (default)• Unacknowledged• Unresolved• Always See Chapter 13 , “ Managing alerts ” for additional information.
Share Devices	Opens the Share Devices wizard (see Figure 195 on page 309) to help you setup a Logical SAN (LSAN) with an MP Router where you can share devices. See Chapter 18 , “ MP Router administration ” for additional information.
Set “admin” Account Passwords	Opens the Set admin Accounts Password window where you can change or set the admin password on multiple switches simultaneously. See “ Setting administrator password on multiple switches ” on page 132 for additional information.
Import Device Node/Port Names	Opens the Device Name Import wizard (see Figure 88 on page 128) to help you import device names and device port names from zone aliases or from a Comma Separated Values (CSV) file. See “ Renaming a device node and device port ” on page 127 for additional information.

Help menu

The Help menu provides access to information about Fabric Manager. [Table 35](#) lists and describes the options that appear in the Help menu.

Table 35 Help menu options

Option	Description
Help	Opens Fabric Manager online help. The online help includes search and printing capability, a table of contents, and an index.
Context Help	Provides a help tool to pinpoint information about a topic. Use the pointer to click anywhere in the Fabric Manager GUI and receive help specific to the area selected.
Status Legend	<p>Provides the color codes for status throughout the GUI (for example, as icon backgrounds in the SAN Elements tab, as background headers in the At-A-Glance views, or as status indicators). The colors and their corresponding statuses are:</p> <ul style="list-style-type: none">• green = healthy• yellow = marginal• red = down• orange = missing switch• blue = unknown• gray = unmonitored
Register	Opens the Fabric Manager Registration dialog box (see Figure 1-55 on page 58). If you have been using an Evaluation version of Fabric Manager, you need to register it within 60 days to receive the Full version. After 60 days the Evaluation version expires. For details, see " Registering Fabric Manager " on page 60.
About	Provides information about the version of Fabric Manager you are using.

3 Fabric management

This chapter provides information on basic Fabric Management. Consult the following sections for the procedural steps required to accomplish the specific Fabric Management tasks:

- [Working with fabrics](#), page 117
- [Monitoring switches, ports, and devices](#), page 125
- ["Working with switch and port groups"](#) on page 135
- ["Configuring log levels, parameters, and options"](#) on page 140
- ["Storing data and performing backups"](#) on page 143

Working with fabrics

This section provides information about discovering fabrics with Fabric Manager (including running subnet scans), renaming and deleting fabrics, customizing and using the information provided in the Fabric Manager views, and synchronizing the data and time across an entire fabric. See the following sections for details:

- ["Discovering a fabric"](#) on page 117
- ["Running a subnet scan \(fabric scan\)"](#) on page 118
- ["Subnet scan results"](#) on page 119
- ["Renaming a fabric"](#) on page 120
- ["Synchronizing time and date across a fabric"](#) on page 120
- ["Customizing views"](#) on page 121
- ["Enabling and disabling table view tooltips"](#) on page 123
- ["Copying table view information to spreadsheets"](#) on page 123
- ["Printing Fabric Manager view information"](#) on page 123
- ["Saving Fabric Manager view information"](#) on page 124
- ["Changing At-A-Glance window descriptions"](#) on page 124
- ["Displaying SAN elements by IP address, domain ID, WWN, and name"](#) on page 124

Discovering a fabric

You must discover a fabric to add it to the SAN Elements tab and administer it with Fabric Manager.

To discover a fabric:

1. Place your cursor in the Address edit box/drop-down menu and delete the contents of the field.
2. Enter the IP address or the DNS name of a switch in the fabric that you want to administer and then press Enter.

You do not need to include `http://` before the IP address to discover a fabric. If you do not know the exact address of a switch, you can run a subnet scan to discover fabrics. See ["Running a subnet scan \(fabric scan\)"](#) next, for additional information.

Running a subnet scan (fabric scan)

You can use Fabric Manager to scan a subnet and discover fabrics. A subnet scan eliminates the need to know the exact address of a switch to discover a fabric. Fabric Manager lists the switches and fabrics that it finds during the subnet scan. You can then add them to Fabric Manager in the SAN Elements tab. See ["Discovering a fabric"](#) on page 117 for information on adding them to Fabric Manager.



NOTE: Switches may appear in your subnet scan even after you unplug their Ethernet cables.

To run a subnet scan:

1. Select **Tools > Subnet scan** or click the  icon from the tool bar.

The Subnet scan dialog box opens ([Figure 81](#)).

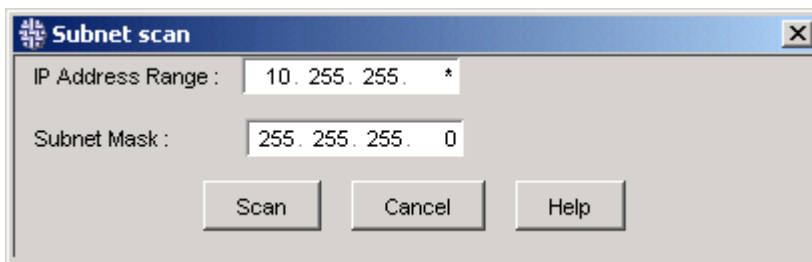


Figure 81 Subnet scan

2. Enter the first three sets of digits of an IP address in the first three sections of the IP Address Range field.
3. Enter a wildcard in the last section of the IP Address Range field to represent the range of the scan. For example:
 - 192.168.168.* discovers any fabric in the address range of 192.168.168.0 through 192.168.168.255.
 - 192.168.168.1** discovers any fabric in the address range of 192.168.168.100 through 192.168.168.199.
 - 192.168.168.11* discovers any fabric in the address range of 192.168.168.110 through 192.168.168.119.
 - 192.168.168.25* discovers any fabric in the address range of 192.168.168.250 through 192.168.168.255.



NOTE: The number before the * can be any number if the resulting range is greater than 0 and less than 255. You cannot enter 192.168.168.3** or 192.168.168.26*.

4. Click **Scan**.

The result of the scan is a list of switches and fabrics (see [Figure 82](#)). Fabrics are indicated with two angle brackets (>>) adjacent to the switch IP address. If you click a fabric, the list expands to include the switches within the fabric.

The switch name is listed next to the switch IP address; the number of switches within the fabric are also displayed.

5. Optional: To add a switch or fabric to Fabric Manager in the SAN Elements tab, click the check box next to the element and then click **Add**.

IP addresses that appear as underlined links with two angle brackets (>>) represent fabrics. Click the link to view the switches in that fabric.



NOTE: To add a switch or fabric to your SAN Elements tab, click the check box next to the element; then click **Add**

6. Click **Done** to close the dialog box.

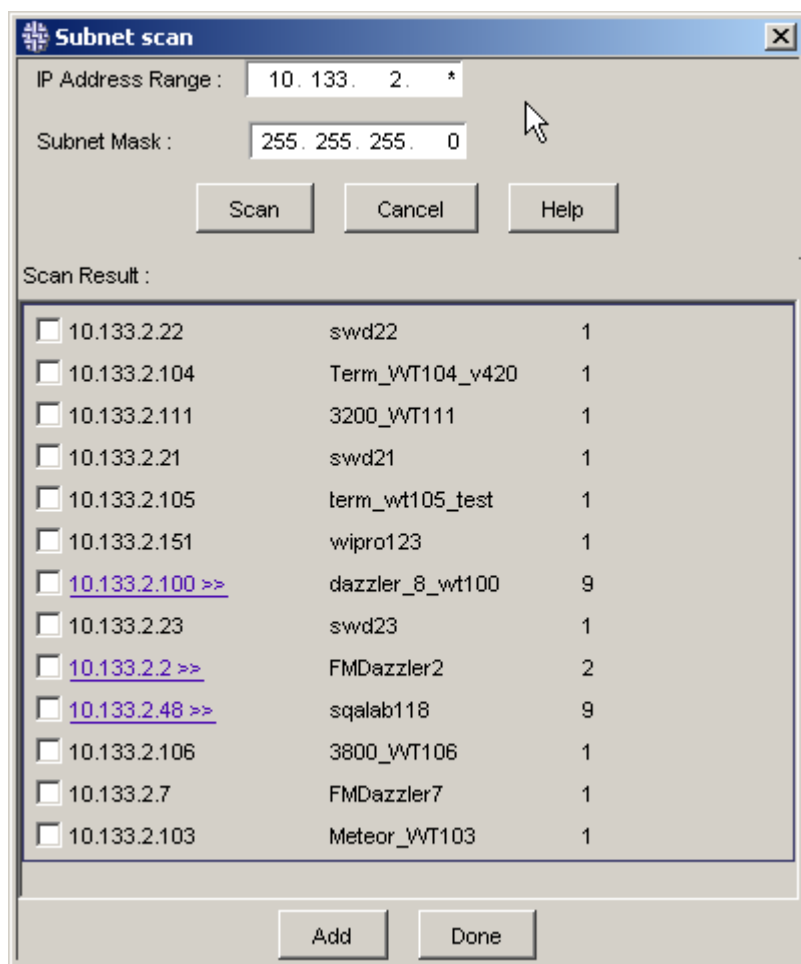


Figure 82 Subnet scan results

Deleting a fabric

If you decide you no longer want Fabric Manager to monitor a specific fabric, you can delete it. However, deleting a fabric also deletes any Change Management profiles and snapshots (see [Chapter 11, "Change management administration"](#)), removes Performance Monitoring data (including historical statistics for its switches and any reports and graphs generated and saved in the database—see [Chapter 19, "Performance monitoring"](#)); any switches and ports from the fabric are removed from their switch or port groups (see ["Working with switch and port groups"](#) on page 135).

To delete a fabric from Fabric Manager:

1. Select the fabric from the SAN Elements tab that you want to remove.
2. Select **Actions > Delete** to remove the fabric.

Fabric Manager prompts you to verify that you want to delete the fabric.

Renaming a fabric

When you discover a fabric, Fabric Manager assigns a name to that fabric that matches the name of the switch that you used to discover the fabric. For example, to monitor a fabric that includes Switch_01, enter the IP address of Switch_01 in the Address edit box/drop-down menu to discover the fabric. Fabric Manager then names that fabric Switch_01 and displays that name in the SAN Elements tab.

After you discover the fabric, you can assign a name to it that serves a more useful purpose for you (for example, mktng_SAN or HQ).

Fabric information is global and any changes you make to the fabric, including renaming the fabric, are displayed to all users connected to the server.

To rename a fabric:

1. Select the fabric that you want to rename from the SAN Elements tab.
2. From the Edit menu, select **Rename**.

A cursor appears to the right of the current fabric name.

3. Enter a new name for the fabric and press **Enter**.

You can also triple-click a fabric icon to rename it, or select the fabric and then press **F2** (in Windows) to rename a fabric.

Synchronizing time and date across a fabric

You can synchronize time and date across an entire fabric. Because the firmware timestamps entries in the port log dump, you can more easily correlate events when you synchronize your fabric.

You must be logged in to switches within a fabric when attempting to set the time on that fabric. The type of fabric configuration determines which switches you must be logged in to. If you are not logged in to the appropriate switches, Fabric Manager prompts you to log in to the appropriate switches before proceeding.

To synchronize the time and date:

1. Log in to the switches in the fabric that you want to synchronize. See ["Setting the log level"](#) on page 140 for additional information.
2. Select the fabric that you want to synchronize from the SAN Elements tab.

You can select a fabric, but not a switch group.

3. Select **Action > Set Time**.

The Time dialog box opens (Figure 83).

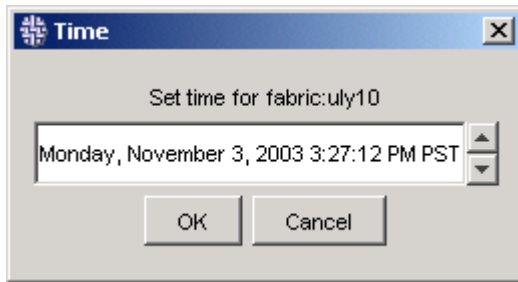


Figure 83 Time dialog box

4. To adjust the time or date, click the applicable areas in the Time dialog box (day-of-week, month, day number, year, hour, minute, second, AM or PM, and timezone). Use the up and down arrows to change the values and then click **OK**.

Customizing views

You can customize the views in Fabric Manager to display only the information you want to see, in the order you want to see it. You can also sort the order of the columns and the order of the information displayed in the columns.

To customize the contents displayed in a view and the order of the columns displayed:

1. Click any element in the SAN Elements tab.
2. Select **View > View Type**, where *view type* is the view that you want to customize (for example, for the Device Ports view, select **View > Device Ports**).

The view you selected opens.

3. Select **Edit > View Options**, or click the **View Options** button (not available in the Topology and Overview views).

The Edit View Options dialog box opens (Figure 84).

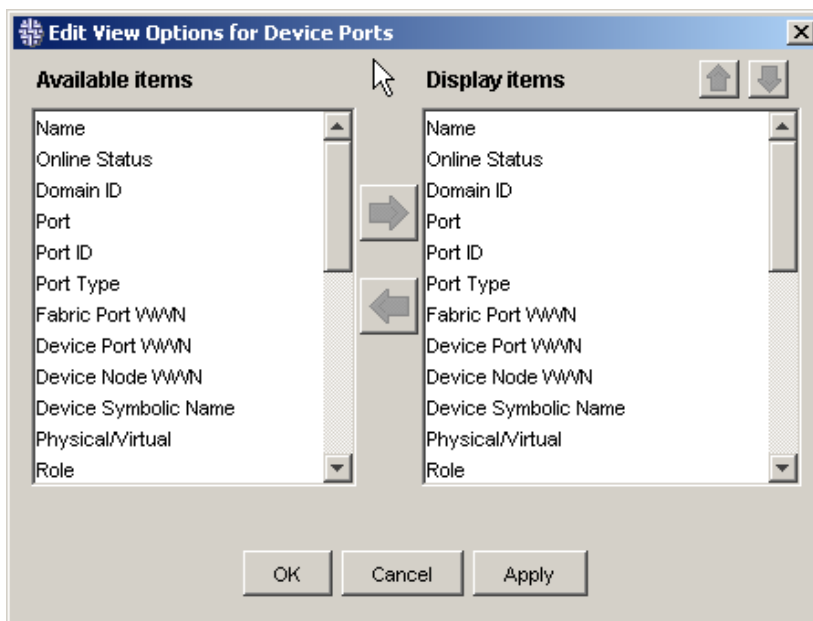






Figure 84 Edit View Options dialog box

- Optional: To select the columns of information that you want to display in all of the table views (does not include the Overview or Topology views), click an item in the Available Items list, and then use the right arrow  to add it to the Display Items list. You can also click an item in the Display Items list and use the left arrow  to remove it (place it in the Available Items list).

You can also use the Ctrl and Shift keys to select multiple items and move them simultaneously.

- Optional: To select the order in which the columns are displayed in all of your table views (does not include the Overview or Topology views), click an item from the Display Items list and then use the up  or down arrows  to rearrange the order (top-to-bottom is left-to-right).
- Click **OK**.

To customize the sorting of the information displayed within a column (ascending or descending):

Optional: Click the header of the column you want to reorder. Each time you click the column heading, the order toggles between ascending and descending.

To customize the sorting of the information displayed within multiple columns from different table views simultaneously (ascending or descending):

- Optional: Within one of the table views (not available in the Overview, Topology, or Portgrid views), select **Edit > Sort Order**.

The Edit Sort Order dialog box opens (Figure 85).

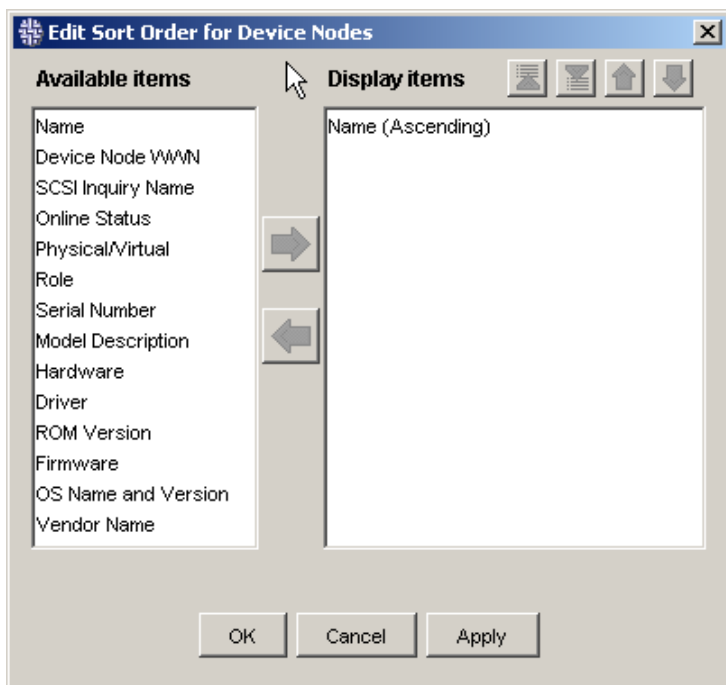





Figure 85 Edit Sort Order dialog box

- Select the column header that corresponds to the column of information you want to reorder from the Available Items list and then click the right arrow  to add it to the Display Items list.
- To rearrange the order of the contents within each of the columns in the Display Items list, click the ascending  or descending  icons to sort the items in the columns into the order you prefer.
- Click **Apply**.
- Click **OK**.

Enabling and disabling table view tooltips

Fabric Manager table views with multiple columns of information are difficult to view because the columns are narrow the side-to-side scroll bars are inconvenient. Information within an individual cell of a column or information within an entire row in a table can be viewed much easier using tooltips. Tooltips provide the entire text of a cell or all of the information for a single row when you mouse over the cell or row. Table view tooltips are enabled by default, but you can disable them.

To enable and disable table view tooltips:

1. Select **File > Options**.

The Options dialog box opens (see [Figure 93](#) on page 132).

2. Enable table view tooltips by selecting the **Show Table Tooltips** check box, or disable tooltips by un-checking the box.
3. Click **OK**.

Copying table view information to spreadsheets

The information provided in tables within the Alerts, Switches, Devices, Device Ports, Portgrid, LSAN, LSAN Info, and Events views of Fabric Manager can be copied to spreadsheet applications.

To copy a table to a spreadsheet application:

1. Click any element in the SAN Elements tab.
2. Select **View > View Type**, where *view type* is the view that you want to customize (for example, for the Device Ports view, select **View > Device Ports**).

The view you selected opens.

3. Click **Copy Table**, or select **Edit > Copy Table**.

A confirmation message opens, indicating that the information is copied to the clipboard.

4. Click **OK** in the confirmation message.
5. Open a spreadsheet application.
6. In the spreadsheet application, open a new spreadsheet and paste the information.


Printing Fabric Manager view information

The contents of each Fabric Manager view (except the Overview view) can be printed.

To print the information displayed in a Fabric Manager view:

1. Select **View > View Type**, where *view type* is the view that you want to customize (for example, for the Device Ports view, select **View > Device Ports**).

The view you selected opens.

2. Select **File > Print**, or click the print icon .

Optional (Topology view only): You can also select **File > Print In One Page** to print all of the topology information on one page.

The Print dialog box opens.

3. Select a printer and click **OK**.

Saving Fabric Manager view information

The information provided in tables within the Alerts, Switches, Devices, Device Ports, Portgrid, LSAN, LSAN Info, and Events views of Fabric Manager can be saved and then opened in external software applications that read tab-delimited files.

To save a table:

1. Click any element in the SAN Elements tab.
2. Select **View > View Type**, where *View Type* is the view you want to customize (for example, for the Device Ports view, select **View > Device Ports**).

The view you selected opens.

3. Click **Save Data** or select **Edit > Save Data**.

The Save Table to a tab-delimited file dialog box opens.

4. Enter a filename for the table and then click **Save**.

The saved file is available to be opened in any software that reads tab-delimited files.

Changing At-A-Glance window descriptions

The At-A-Glance window descriptions are displayed directly beneath the element name that corresponds to the window (see [Figure 59](#) on page 78). You can provide a description for this window if you want (the default is Double-click to add description). You must be in the Overview view to change an At-A-Glance window description.

To change an At-A-Glance window description:

1. Select the element in the SAN Elements tab that needs a new description.
2. Select **View > Overview**.

The Overview view for the element you selected opens.

3. Select **Edit > Change Description** or double-click the header.

The Please enter the new description dialog box opens.

4. Enter a new description and then click **OK**.
5. Optional: To view the new description, click the parent element in the SAN Elements tab.

The new description is displayed in the At-A-Glance window.

Displaying SAN elements by IP address, domain ID, WWN, and name

You can view the SAN Elements tab in Fabric Manager by the identifier that you find most useful. Because you can identify most SAN elements in multiple ways (for example, you can identify a switch by IP address, domain ID, WWN, and name), Fabric Manager lets you choose the identifier that you want. When you select an identity, you choose the type of identifier that Fabric Manager displays for each element.

To select the identifier, click (**Name**, **IP**, **Domain ID**, or **WWN**) from the ID menu.

Monitoring switches, ports, and devices

This section provides information about monitoring switches, ports, and devices with Fabric Manager. Consult the following sections for specific information:

- ["Filtering elements"](#) on page 125
- ["Enabling and disabling elements"](#) on page 126
- ["Renaming a switch"](#) on page 126
- ["Renaming a port"](#) on page 127
- ["Renaming a device node and device port"](#) on page 127
- ["Logging in to multiple switches simultaneously"](#) on page 130
- ["Enabling and disabling switch passwords"](#) on page 132
- ["Setting administrator password on multiple switches"](#) on page 132
- ["Designating a core switch"](#) on page 134
- ["Opening a telnet session for a nonsecure switch"](#) on page 134
- ["Displaying the switch health report"](#) on page 134

Filtering elements

The Filter tab consists of the following three components:

- Text field
- Drop-down menu
- SAN Elements field

To filter elements:

1. Select the **Filter** tab.

The Filter tab components are displayed ([Figure 86](#)).

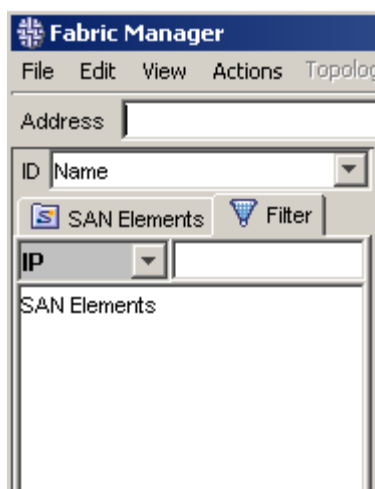


Figure 86 Filter tab

2. From the menu, select an identifier (**IP**, **Name**, **Type**, **Version**, **WWN**, or **Domain ID**).
3. In the text field, enter text (letters, numbers, or symbols such as a period) included in the elements that you want to view. For example:
 - To view all the elements that include *switch* in their names, click **Name** from the menu and enter *switch* in the text field.
 - To view elements that include *10.32* in the IP address, click **IP** from the menu and enter *10.32* in the text field.
4. Press **Enter**.

Each element you selected from the menu that includes the text that you entered is displayed in the SAN Elements field automatically.

Enabling and disabling elements

You can use Fabric Manager to quickly enable or disable a port, a switch, or multiple ports and switches across multiple fabrics.



NOTE: A disabled port on an MP Router is both disabled and stopped. An enabled MP Router is both enabled and started.

To enable or disable elements:

1. Log in to the switches necessary to disable or enable the elements. You cannot enable or disable a port or switch until you log in to that switch. If you are not logged in to the appropriate switches, Fabric Manager prompts you to do so before you can continue. See to "[Setting the log level](#)" on page 140 for additional information.
2. Select the switches, ports, or switch/port groups that you want to disable from the SAN Elements tab.
3. Select **Actions > Disable** or **Actions > Enable**.



NOTE: The status of the switch determines whether the menu item (disable or enable) is available. For example, a disabled switch can only be enabled. If you are using telnet, however, the enable and disable commands are executable regardless of the switch status.

Renaming a switch

Switch information is global; any changes you make to the switch, including renaming the switch, are displayed to all users connected to the server.

To rename a switch:

1. Select the switch you want to rename from the SAN Elements tab.

You must be logged in to the switch to rename it. If you are not logged in to the switch, Fabric Manager prompts you to log in before proceeding.
2. From the Edit menu, select **Rename**.

A cursor appears to the right of the current switch name.
3. Enter a new name for the switch and press **Enter**.

You can also triple-click a switch icon to rename it or select the switch and then press **F2** (in Windows) to rename the switch.

Renaming a port

If you want to rename a port on a switch that runs firmware versions earlier than 3.1.0 or 4.1.0, the port name is local to each Fabric Manager client and must be changed on each client individually.

If you rename a port on a switch that runs firmware versions 3.1.0 (and later) or 4.1.0 (and later), Fabric Manager propagates that name to the port and changes the port name on the switch, provided the fabric login information has been set up successfully.

Port information is global; any changes you make to the port, including renaming the port, are displayed to all users connected to the server.

To rename a port:

1. Select the port you want to rename from the SAN Elements tab.
2. From the Edit menu, select **Rename**.

A cursor appears to the right of the current port name.

3. Enter a new name for the port and press **Enter**.

You can also triple-click a port icon to rename it or select the port and then press **F2** (in Windows) to rename the port.

Renaming a device node and device port

Device nodes and device ports are identified using WWN and SCSI inquiry or symbolic names.

You can name devices using zone aliases by placing a WWN in a zone alias and then defining the name however you want. Subsequently, the device is identified using the name of the alias in which it was placed, using the zone alias as the name of the device.

You can use Fabric Manager to import names for devices from the zone aliases defined in the zoning database on a fabric. You can also rename the devices manually. The devices are then identified by the new name attribute wherever they are displayed in Fabric Manager (for example, in the Share Device wizard, LSANs view, device ports table, device node table, and so on). Before you rename a device node or port using a zone alias, note the following:

- If an alias contains more than one member, the alias is ignored.
- If a WWN is contained in multiple aliases, one of the aliases is selected at random.
- An import operation overrides current names for devices.
- The names are global to the Fabric Manager server and apply to the Device Node and Device Ports for all fabrics on that Fabric Manager server.
- The Name value is stored in a different table from the Device Node and Device Port information. This allows the device to exit the fabric and return without losing the user configured name.
- The name defaults to SCSI inquiry name for device nodes and symbolic name for device ports.

You can rename device node and device port names either from the Device Node and Device Port tables, or from the At-A-Glance view for the device.

To rename a device node or device port:

1. Select a fabric from the SAN Elements tab and then select **View > Device Nodes or Device Ports**.

The selected view opens (see [Figure 87](#)). In this figure, it is the Device Ports view.

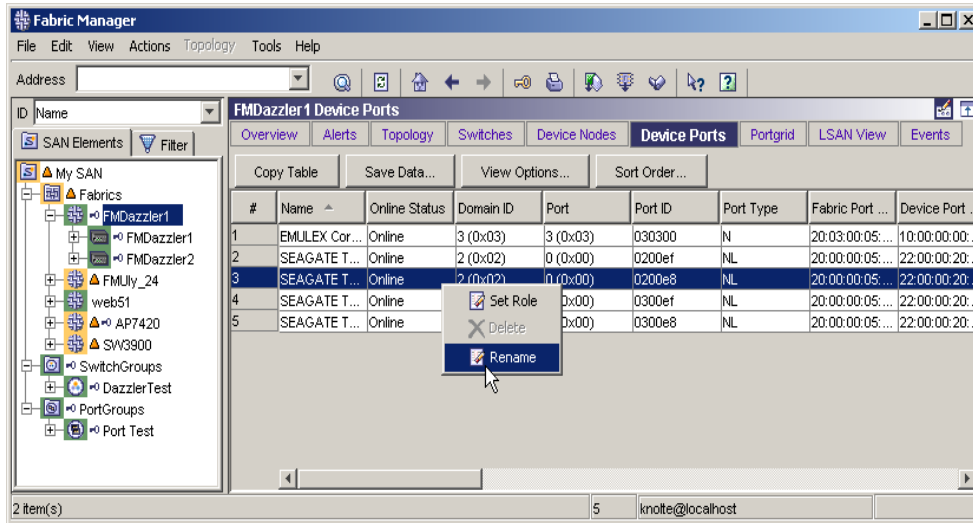


Figure 87 Renaming a device port

2. Select a row within the Device Ports table and then right-click to rename the selected device port (see [Figure 87](#)).
3. Optional: You can also import the names from aliases defined in the zoning database of fabrics through a menu option on the Tools menu. Select **Tools > Import Device Node/Port Names**.

The Device Name Import wizard opens ([Figure 88](#)).

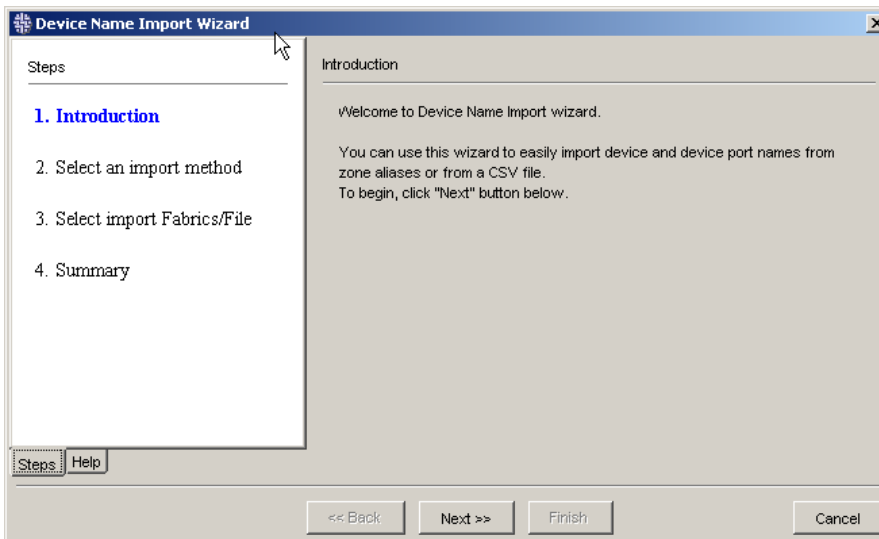


Figure 88 Device name import wizard

4. Read the Introduction and then click **Next**.

The Select an import method dialog box opens (see [Figure 89](#)).

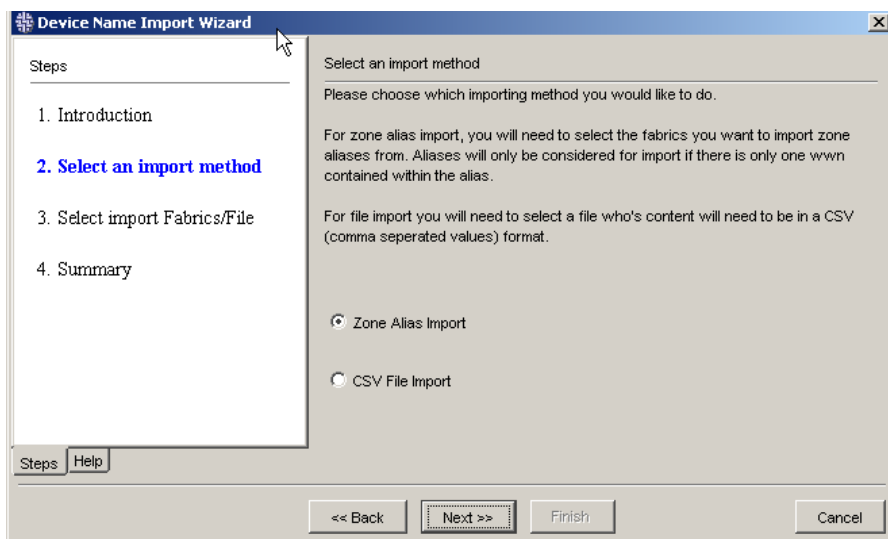


Figure 89 Select an import method

5. Select the import method (**Zone Alias Import** or **CSV File Import**) and then click **Next**.
6. If you selected Zone Alias Import, you must select a fabric (see [Figure 90](#)). If you selected CSV File Import, you must select a file (see [Figure 91](#)).

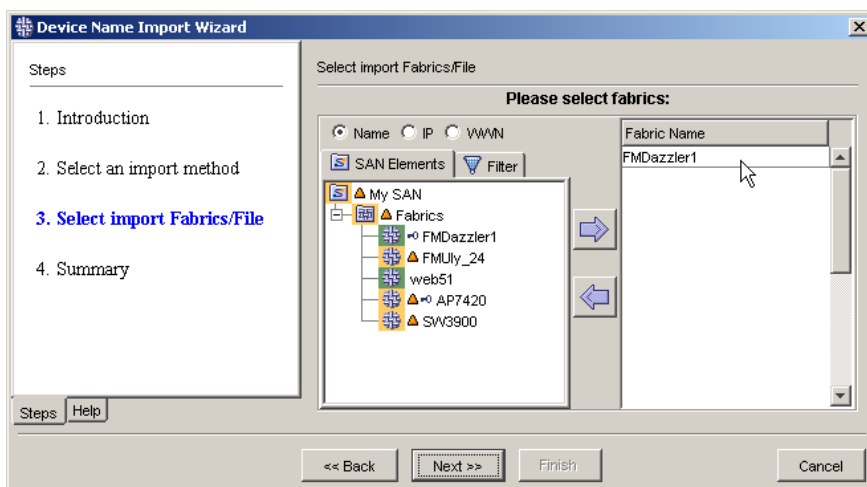


Figure 90 Zone alias import

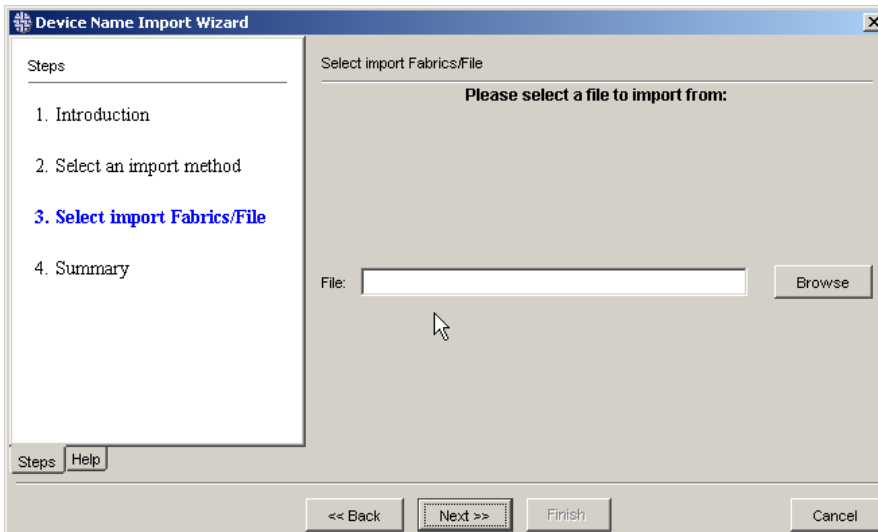


Figure 91 CSV file import

7. Select the fabric or file and then click **Next**.

Follow the prompts to complete the import process (from either the fabric or file).

Logging in to multiple switches simultaneously

You can use Fabric Manager to log in to multiple switches at the same time. With multiple login, you do not need to log in to each switch individually to administer your fabric. After you log in to a switch, Fabric Manager stores your login information and automatically logs you in to the switches. By default, Fabric Manager stores switch passwords to the server. You can also disable switch passwords from being saved to the server. See [“Enabling and disabling switch passwords”](#) on page 132 for additional information.

You must log in to a switch to perform most of the Fabric Manager administrative tasks.



NOTE: You cannot log in to v4.0 through v4.2 switches with the factory user account in Fabric Manager (although you can from the CLI or Advanced Web Tools). You must use an account with administrative privileges (such as admin) to gain access.

To log in to multiple switches:

1. Select **File > Fabric Login**.

The Fabric Login window opens (see [Figure 92](#)).

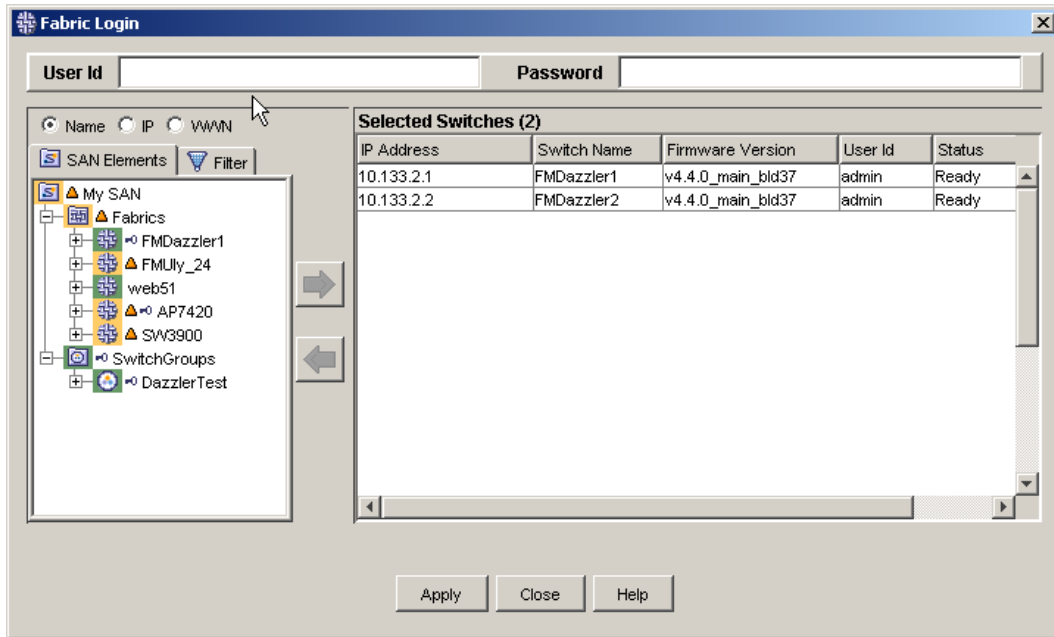



Figure 92 Fabric login

2. Select the switches or fabrics you want from the SAN Elements tab and click the right arrow to move them to the Selected Switches window.

You can also drag fabric or switch names from the SAN Elements tab directly into the Selected Switches window.

3. Enter your username in the User ID field.
4. Enter your password in the Password field.
5. Click **Apply**.

The success or failure of the login is displayed in the Status column of the Selected Switches window.

A key icon  appears next to each switch and fabric that completes a successful login.

The background of the status field changes colors to display its status, as follows:

- Green indicates a successful login.

The user ID and password is saved for performing administrative operations until the session is terminated. When the session is terminated, the user ID and corresponding password are saved in a persistent file on the Fabric Manager server. The saved information is used for successive Fabric Manager sessions when administrative operations are initiated from Fabric Manager.

- Red indicates that the login failed.

The user ID and password are not saved in memory.

- Yellow indicates one of the following conditions:

- The switch login is being applied; the Status column text changes to Testing.
- The switch is Unreachable in Fabric Manager. When you add this unreachable switch to the Selected Switches list, the Status column text changes to Unreachable.



NOTE: If you did not log in to all of the switches successfully, remove the successful switches from the Selected Switches window and retry with a new user ID and password.

Enabling and disabling switch passwords

Fabric Manager stores switch passwords to the server automatically (by default).

To enable and disable switch passwords from being saved to the server:

1. Select **File > Options**.

The Options dialog box opens (see [Figure 93](#)).

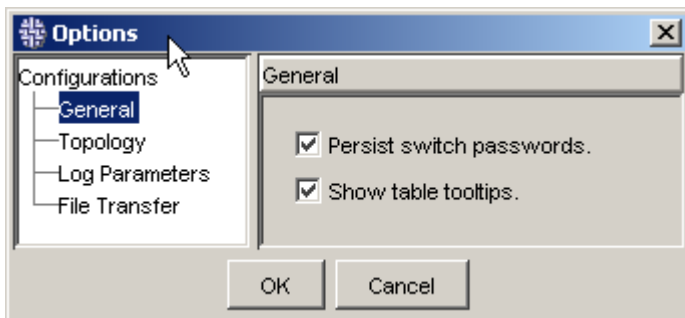


Figure 93 Options (general)

2. Enable switch passwords to be saved to the server by clicking and checking the **Persist switch passwords** check box or disable switch passwords from being saved to the server by un-checking the box.
3. Click **OK**.

Setting administrator password on multiple switches

You can set the admin account password on multiple switches simultaneously by using the Tools menu in Fabric Manager. The passwords can be set only for the admin account. Additional accounts with administrator-level privileges are excluded (such as root or factory). You cannot use a RADIUS server for authentication on a selected switch. You also cannot set the admin account on any switches in secure mode. This feature is available only for nonsecure switches (see ["Configuring no-node WWN zoning"](#) on page 297 for information about setting passwords in secure fabrics).

To set the admin account password on multiple switches:

1. Select **Tools > Set "admin" Account Passwords**.

The Set admin Account Passwords window opens (see [Figure 94](#)).

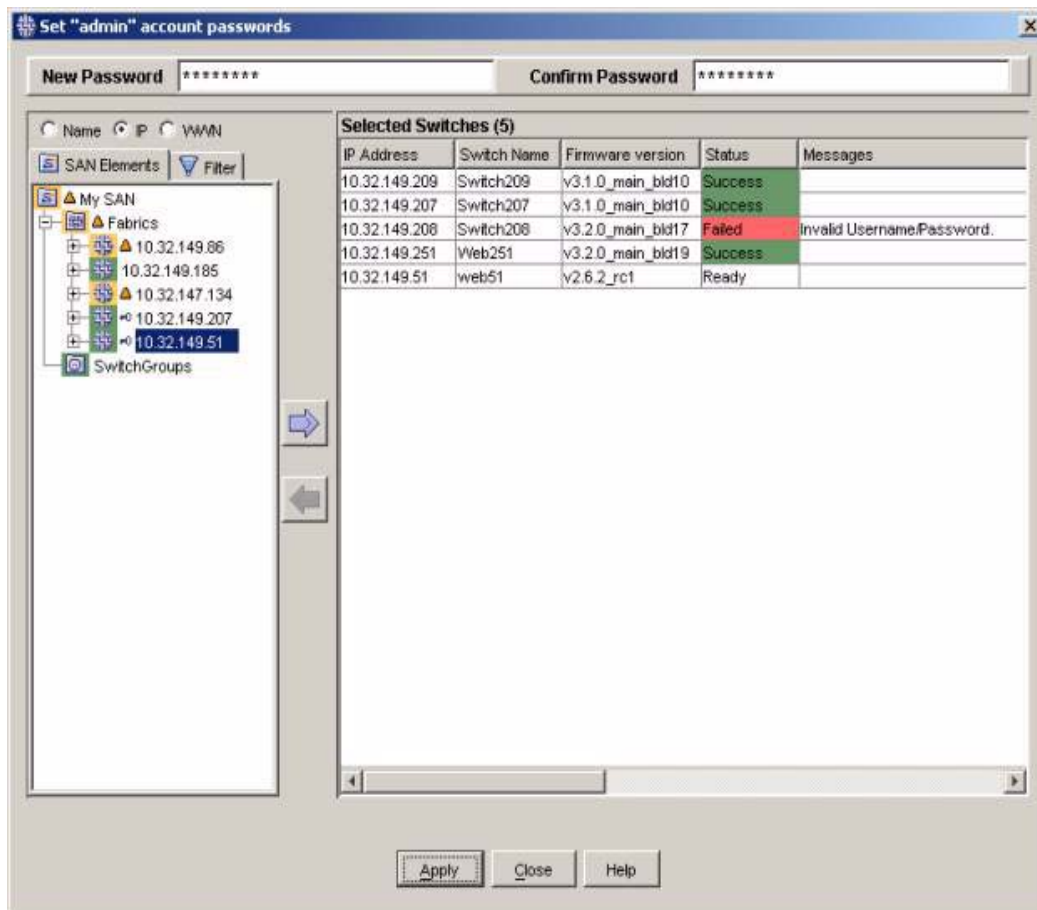


Figure 94 Set admin account passwords

2. Select the switches or fabrics you want from the SAN Elements tab and click the right arrow to move them to the Selected Switches window.

You can also drag fabrics or switches from the SAN Elements tab directly into the Selected Switches window.

3. Enter the password you want in the New Password field.

Passwords must:

- Be between 8 and 40 characters.
- Be entered exactly as you want it.
- Include only printable ASCII characters, with the following exceptions: slash (/), backslash (\), less than (<), greater than (>), ampersand (&), quotation mark, and apostrophe.

4. Reenter the new password in the Confirm Password field.

5. Click **Apply**.

If you have not logged in to the selected switches, the switch login dialog box opens. This allows you to enter the current login information for that switch.

When all of the selected switches have the current login information, Fabric Manager begins to set the new admin account password on each switch in the table, starting with the first switch listed and then proceeding down the list in the table one switch at a time.

The success or failure of the login is displayed in the Status column of the Selected Switches window.

The background of the status field changes color to display its status, as follows:

- Yellow indicates that Setting the new password is in progress.
- Red indicates Failed and an error message is also displayed in the adjacent Messages column.
- Green indicates Success for the new password.

After a switch has a successful new password setting, the switch password saved for that user for the selected switches in Fabric Manager is updated with the new password.

A key icon appears next to each switch and fabric that completes a successful login.

Designating a core switch

This procedure applies only to core-edge topologies.

All switches defined in the FCS policy of a secure fabric are considered core switches. Any switches with devices attached to them are automatically considered edge switches. See [Table 41](#) on page 175 for additional information.


To assign a core switch manually:

1. Select a switch from the SAN Elements tab that you want to designate as a core switch.
2. Select **Actions > Core Switch**.
3. To confirm the new core designation, view the fabric in which the switch resides in the Topology view (see [Figure 70](#) on page 91).
4. Select the core-edge layout within Topology view (see [Figure 115](#) on page 174).

The switch is displayed as a core switch.

Opening a telnet session for a nonsecure switch

To open a telnet session for a nonsecure switch (a switch without secure mode enabled):

1. Select a nonsecure switch from within the SAN Elements tab.
2. Select **Actions > Telnet** or click the telnet icon  from within the At-A-Glance window of the switch in the Overview view.

The telnet prompt is displayed.

3. Log in using telnet.

Displaying the switch health report



NOTE: The switch health report is available only for switches running firmware versions later than Fabric OS v4.2.x. For switches running 4.2.x or earlier, the switch health report is unavailable and the icon is not displayed in the At-A-Glance view for that switch.

Fabric Manager creates a switch health report that is Web-based. You must be logged in to the switch for the Health Report option to be available. The report displays the switch state contributors, the status, and the IP address of the switch.

To display the switch health report:

1. Select a switch from the SAN Elements tab.

2. Select **Actions > Health Report**.

The Switch Health Report opens (see [Figure 95](#)).

You can also click the switch health report icon  from the switch At-A-Glance view, or right-click a switch name in the SAN Elements tab and then click **Health Report** to access the window illustrated in [Figure 95](#).

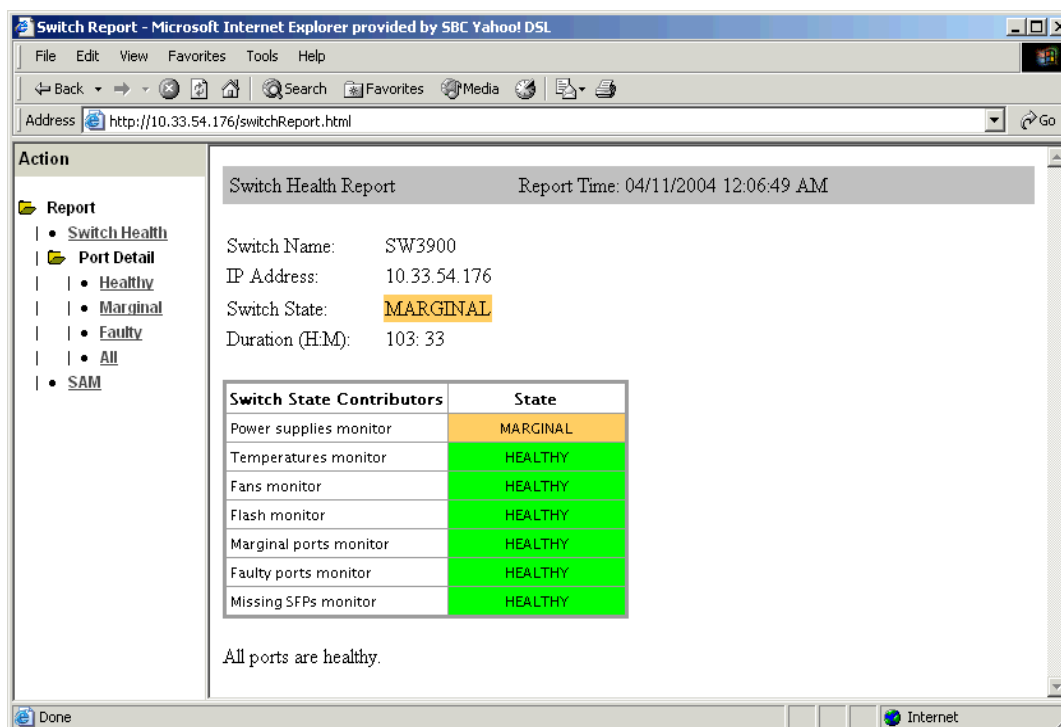


Figure 95 Switch health report

Working with switch and port groups

This section describes how to use Fabric Manager to create groups of SAN elements (switch groups or port groups) that you can monitor and manage as a group. Groups are global across Fabric Manager. All Fabric Manager users using the same server see the same groups, and each user can make changes to these groups.

Creating groups allows you to organize switches or ports by function, type, firmware version, or any other criteria that you select. You can also create functional hierarchies of groups. Using switch or port groups simplifies your management tasks. For example, you can log in to all switches in a group or activate licenses on all group members simultaneously. Additional reasons for creating groups include the following:

- Create groups of switch model types or firmware versions to expedite firmware downloads
- Activate licenses on all group members simultaneously
- Group switches by function to monitor switches that belong to different departments or that serve as a backbone to the SAN
- Group switches by physical location to monitor fabrics in disparate locations
- Group switches by SAN island to monitor or update individual islands
- Group switches by redundancy so you can maintain one half of a fabric while the other half continues to carry traffic

- Nest fabrics to drill down to the source of a problem. For instance, if you create a switch group for a campus, then nest within that switch groups for departments, you can move down the hierarchy to determine the source of any status change.
- Create separate groups for monitoring and management to reduce unnecessary levels of nesting
- Group ports by certain devices and hosts to more easily monitor those elements
- Use groups to simplify the monitoring view of a large or complex fabric

The following sections provide information about working with switch and port groups:

- ["Creating switch groups"](#) on page 136
- ["Editing a switch group"](#) on page 138
- ["Deleting a switch group"](#) on page 138
- ["Creating port groups"](#) on page 138
- ["Editing a port group"](#) on page 140
- ["Deleting a port group"](#) on page 140

Creating switch groups

To create a group of switches:

1. Select **File > Groups > Edit Switch Groups**.

The Edit Switch Groups dialog box opens (see [Figure 96](#)). [Table 36](#) provides a description of the Edit Switch Groups dialog box.

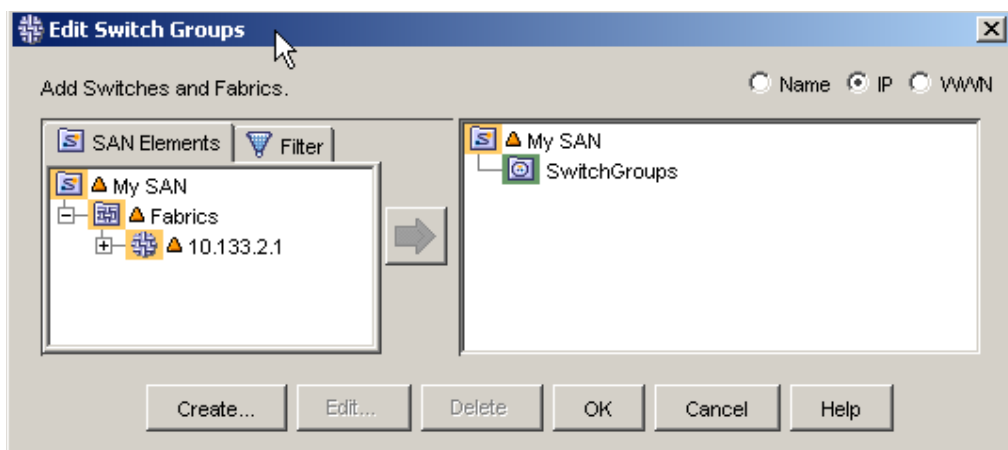


Figure 96 Edit Switch Groups dialog box

Table 36 Edit switch groups window components

Component	Description
Name, IP, and WWN radio buttons	Determine how the SAN Elements tab identifies switches. See "Displaying SAN elements by IP address, domain ID, WWN, and name" on page 124 for additional information.
SAN Elements tab	Displays the fabrics and switches you can add to your groups.
Filter tab	Filters elements based on alphanumeric text strings.
SwitchGroups navigation tree	Displays existing switch groups and lets you move groups within the tree.
Create button	Opens the Create Group window to create and name a new switch group.
Edit button	Opens the Edit Group window to rename an existing switch group.
Delete button	Deletes an existing switch group.
OK button	Applies and saves switch group edits.
Cancel button	Aborts switch group edits.
Help button	Opens Fabric Manager online help.

2. Click the **SwitchGroups** icon in the right window.

The group that you create display as nested within the item that you click in this step. If you click an existing group instead of the SwitchGroups icon, your new group appears as a subgroup of that group. After you create a group, you can drag it to a new location in the hierarchy.

3. Click **Create**.

The Create Group dialog box opens.

4. Enter a name for your group in the Name field and click **OK**.



NOTE: A switch can be in more than one group at the same time.

5. Click the icon of the switch group that you created.
6. Select the switch that you want to add to your group from the SAN elements tab and then click the right-arrow to add the switch to the group.

To add multiple switches at once, you can either press and hold the **Ctrl** key as you click additional switches or drag any node in the tree to add the switches from that node. Drag switches directly from the SAN elements tab to the switch group to populate the group quickly.

7. Click **OK** when you are finished adding switches to your group.

The group is displayed in the SAN Elements tab under SwitchGroups.

8. Click the switch group to view its members.



NOTE: If a switch is removed from a fabric and it was a member of a group, it is also automatically removed from the group.

Editing a switch group

To edit a switch group:

1. Select **File > Groups > Edit Switch Groups**.

The Edit Switch Groups dialog box opens (see [Figure 96](#) on page 136).

2. Select the switch group that you want to edit from the right window.
3. Add any members from one group to another by dragging the members to another group.
Delete a member from a group by selecting it and clicking **Delete** in the Edit Groups dialog box.
4. Click **OK**.

Deleting a switch group

To delete a switch group:

1. Select **File > Groups > Edit Switch Groups**.

The Edit Switch Groups dialog box opens (see [Figure 96](#) on page 136).

2. Select the switch group that you want to delete from the right window.
3. Click **Delete**.

You can also delete a group directly from the SAN Elements tab by selecting the group and then pressing **Delete** on your keyboard.

4. Click **OK**.

Creating port groups

To create a group of ports:

1. Select **File > Groups > Edit Port Groups**.

The Edit Port Groups dialog box opens (see [Figure 97](#)).

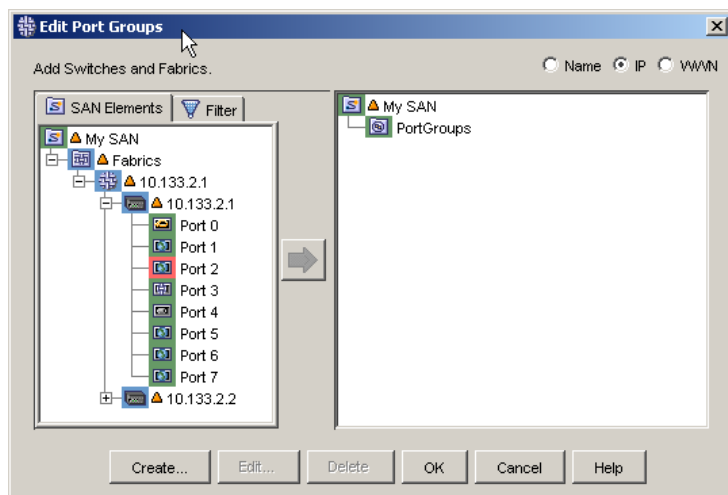


Figure 97 Edit Port Groups dialog box

Table 37 Edit ports groups window components

Component	Description
Name, IP, and WWN radio buttons	Determine how the SAN Elements tab identifies switches. For more information, see "Displaying SAN elements by IP address, domain ID, WWN, and name" on page 124.
SAN Elements tab	Displays the fabrics and switches you can add to your groups.
Filter tab	Filters elements based on alphanumeric text strings.
PortGroups navigation tree	Displays existing port groups and lets you move groups within the tree.
Create button	Opens the Create Group window to create and name a new port group.
Edit button	Opens the Edit Group window to rename an existing port group.
Delete button	Deletes an existing port group.
OK button	Applies and saves port group edits.
Cancel button	Aborts port group edits.
Help button	Opens Fabric Manager Help to the Groups section.

2. Click the **PortGroups** icon in the right window.

The group that you create displays as nested within the item that you click in this step. If you click an existing group instead of the PortGroups icon, your new group appears as a subgroup of that group. After you create a group, you can drag it to a new location in the hierarchy.

3. Click **Create**.

The Create Group dialog box opens.

4. Enter a name for your group in the Name field and click **OK**.



NOTE: A switch can be in more than one group at the same time.

5. Click the icon of the port group that you created.

The group appears in the SAN Elements tab under SwitchGroups.

6. Click the switch group to view its members.

7. From the SAN Elements tab, select the fabric, switch, card (for director-level switches only), and the port that you want to add to your group; then click the right-arrow to add the port to the group.

To add multiple ports at once, either press and hold the **Ctrl** key as you click additional ports or drag ports directly from the SAN Elements tab to the port group to populate the group quickly.

8. Click **OK** when you are finished adding ports to your group.

The group is displayed in the SAN Elements tab under PortGroups. Click the port group to view its members.

Editing a port group

To edit a port group:

1. Select **File > Groups > Edit Port Groups**.

The Edit Port Groups dialog box opens (see [Figure 97](#) on page 138).

2. Select the port group that you want to edit from the right window.
3. Add the members from one group to another by dragging the members to another group.
Delete a member from a group by selecting it and clicking **Delete** in the Edit Groups dialog box.
4. Click **OK**.

Deleting a port group

To delete a port group:

1. Select **File > Groups > Edit Port Groups**.

The Edit Port Groups dialog box opens (see [Figure 97](#) on page 138).

2. Select the port group that you want to delete from the right window.
3. Click **Delete**.

You can also delete a group directly from the SAN Elements tab by selecting the group and then pressing **Delete** on your keyboard.

4. Click **OK**.

Configuring log levels, parameters, and options

This section provides information about setting the log level parameters for capturing diagnostic information, configuring file transfer options, and configuring notification parameters for alerts within Fabric Manager. The following sections provide specific information:

- ["Setting the log level"](#) next
- ["Configuring file transfer options"](#) on page 141
- ["Configuring notification parameters"](#) on page 142

Setting the log level

Use this feature to capture diagnostic information. You can set the log parameters to capture diagnostic information only at the severity levels you want. Configuring the severity levels determines which errors you want Fabric Manager to save to the log file. Any changes you make to the log level are immediate (they do not require an application restart).

To configure log parameters:

1. Select **File > Options**.

The Options window opens (see [Figure 93](#) on page 132).

2. Click **Log Parameters**.

The Log Parameters dialog box opens (see [Figure 98](#)).

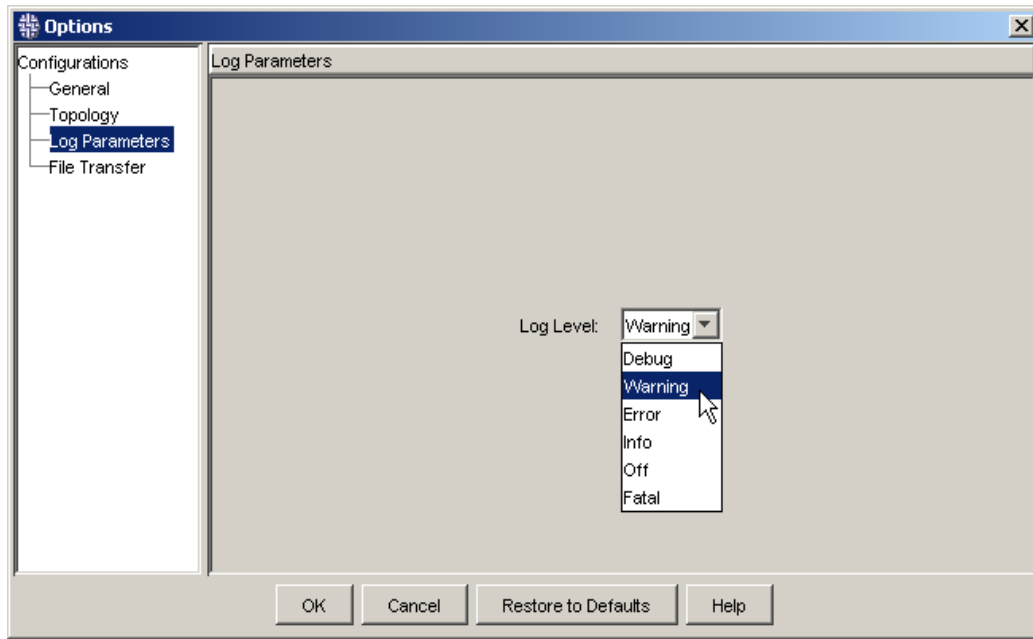


Figure 98 Log Parameters dialog box

3. Select **Log Level > Level**, where *Level* is one of the following: Debug, Warning, Error, Info, Off, or Fatal.

Fabric Manager logs all events of that severity level and lower. Selecting Off disables the logger.

4. Click **OK**.

Configuring file transfer options

You must set up file transfer options before you can transfer files from a host IP to the remote IP of a switch using the File Transfer Protocol (FTP). The FTP server must allow read and write access from the Fabric Manager server for these options to work correctly.

To configure file transfer options:

1. Select **File > Options**.

The Options window opens (see [Figure 93](#) on page 132).

2. Click **File Transfer**.

The File Transfer dialog box opens (see [Figure 99](#)).

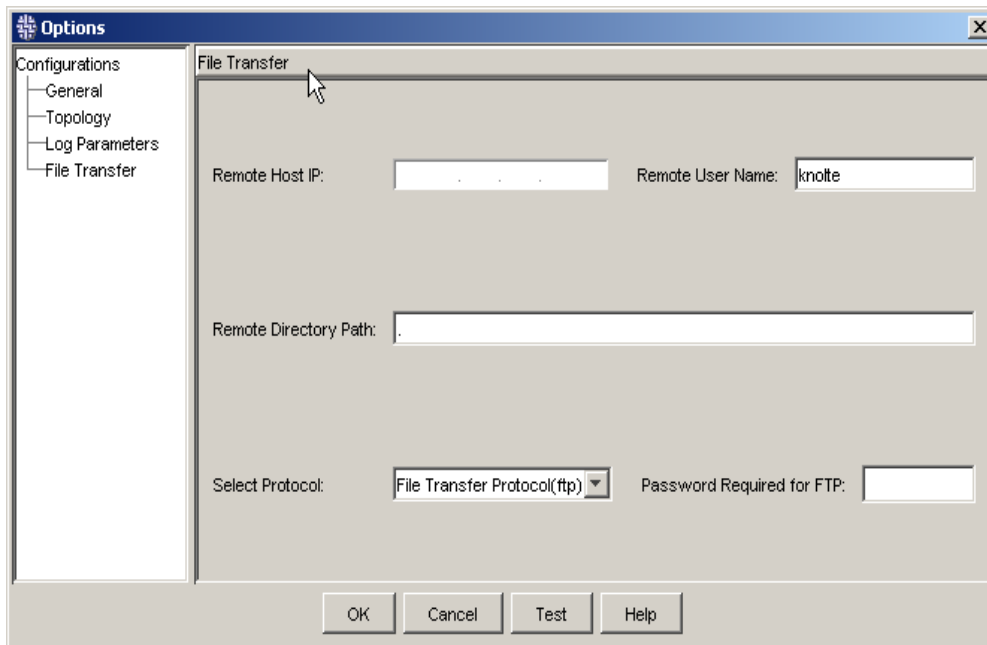


Figure 99 Options (file transfer)

3. Enter the IP address of your FTP server in the Remote Host IP field.
4. Enter your login name in the Remote User Name field.
5. Enter a default FTP directory in the Remote Directory Path field. Do not enter a file name, only a directory.
6. Select **Select Protocol > File Transfer Protocol(ftp)**.
7. Enter your password in the Password Required for FTP field.
8. Click **Test** to ensure that you can access the FTP server specified. Fabric Manager reports success or failure. The test must be successful for certain features to work (for example, firmware download, configuration download, fabric merge check).

In addition to validating connectivity to the FTP server, clicking the **Test** button writes a temporary file to the specified FTP directory. For the test to complete successfully:

- Write permissions must be set up properly on the specified directory of the FTP server.
- Ports 20 and 21 must be open between the Fabric Manager client, the FTP server, and the switch.

9. Click **OK** to save the settings.

Configuring notification parameters

You can configure notification parameters for Change Management mail notifications and Call Home e-mail notifications on a global basis because each user on a server shares the same configuration values. The configuration information is stored in the Fabric Manager database and persists across client and server reboots.

You must configure notification parameters before specifying that you get e-mail notifications or reports for Change Management or Call Home.

To configure notification parameters:

1. Select **Tools > Notification Configuration**.

The Notification Configuration dialog box opens (see [Figure 100](#)).

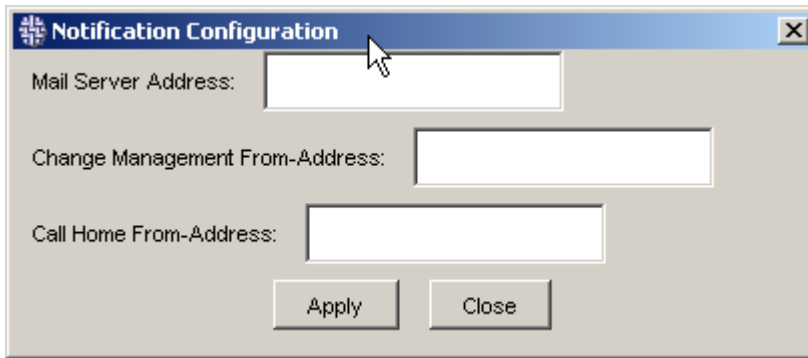


Figure 100 Notification Configuration dialog box

2. Enter the following addresses:

- Mail Server
- Change Management From; the e-mail address of the site mail server host for Change Management.
- Call Home From; the e-mail address of the site mail server host for Call Home.

3. Click **Apply**.

Storing data and performing backups

Fabric Manager stores user settings when you exit, not while you run the software. When the client attempts to log in to the server, the server authenticates the client login. After the server authenticates the client, Fabric Manager launches and polls switches.

Fabric Manager stores the following user settings locally (on the client machine):

- Fabric Manager user name
- Host name/server IP address of all servers you have successfully accessed
- Browser path used to launch Advanced Web Tools
- Dimensions of the Fabric Manager window

The following user settings are saved on the database in the server:

- User interface settings (view customizations, topology locations, and so on)
- Switch user names and passwords

Other settings are global to all clients running on the same Fabric Manager server. To perform database backups, you can use the dbbackup utility, which is called from a script to back up the Fabric Manager database. You can perform either a full or an incremental backup. The full database backup includes both the transaction log file and the database file. The incremental backup backs up only the transaction log file.

Full backup

To perform a full backup, enter the following command in the CLI (the entire command is on a single line):

```
dbbackup -c  
"uid=dba;pwd=sql;eng=fabman;CommLinks=tcpip{DOBROADCAST=DIRECT;HOST  
=localhost;ServerPort=2638}" -y -r -n destdir
```

where:

- *destdir* is the destination directory for the backup files.
- *-y* is an option that causes the *dbbackup* utility to overwrite files without a prompt.



CAUTION: Use the *-y* option with care if you are always backing up the same directory. The *fabman.db* database file is overwritten without a prompt by this option.

- *-r* is an option that renames and restarts the transaction log file after backing it up. You can use this option to reduce the transaction log file size.
- *-n* is an option that causes the transaction log file to be named using the *yymmddxx.log* format, where *xx* is AA, AB, AC, etc.



NOTE: A copy of the transaction log file is also placed in the databases directory. This copy can be safely deleted after the backup is complete.

Incremental backup

To perform an incremental backup, enter the following command in the CLI (the entire command is on a single line):

```
dbbackup -c  
"uid=dba;pwd=sql;eng=fabman;CommLinks=tcpip{DOBROADCAST=DIRECT;HOST  
=localhost;ServerPort=2638}" -y -r -n -t destdir
```

where:

- *destdir* is the destination directory for the backup files.
- *-y* is an option that causes the *dbbackup* utility to overwrite files without any prompt.



CAUTION: Use the *-y* option with care if you are always backing up the same directory. The *fabman.db* database file is overwritten without a prompt by this option.

- *-r* is an option that renames and restarts the transaction log file after backing it up. You can use this option to reduce the transaction log file size.
- *-n* is an option that causes the transaction log file to be named using the *yymmddxx.log* format, where *xx* is AA, AB, AC, etc.
- *-t* causes only the transaction log file to be backed up.



NOTE: A copy of the transaction log file is also placed in the databases directory. This copy can be safely deleted after the backup is complete.

4 License key administration

This chapter describes how to use Fabric Manager to administer the license keys that are required for the use of Fabric OS features.

These features are:

- Full Fabric
- Extended Fabric
- Entry Fabric
- Advanced Zoning
- Advanced Performance Monitoring
- Trunking
- Security
- Quickloop
- Fabric Watch
- Remote Switch
- Remote Fabric
- Advanced Web Tools



NOTE: An Advanced Web Tools license must be installed on a switch before Fabric Manager can recognize the switch. All other licenses can be installed using Fabric Manager.

You can use Fabric Manager to display, store, load, and reload your license keys in the event of a switch failure. With E-Licensing, you can request license keys online and install them with Fabric Manager.

Exporting license keys (switches-to-file)

You can export the license keys of multiple switches to a single file. You can even export keys from different switches in different fabrics to one file. The file matches the license keys to the WWN of the appropriate switch so you can quickly and easily import the keys at any time. You should export license keys from healthy switches to a file so you can restore the licenses if switches fail. If for any reason you need to recover your license keys, import those keys from the file you created.

To export license keys to a file:

1. Select **Tools > Licensing > Load from Switch**.

The License Admin – Switch Selection window opens (see [Figure 101](#)).

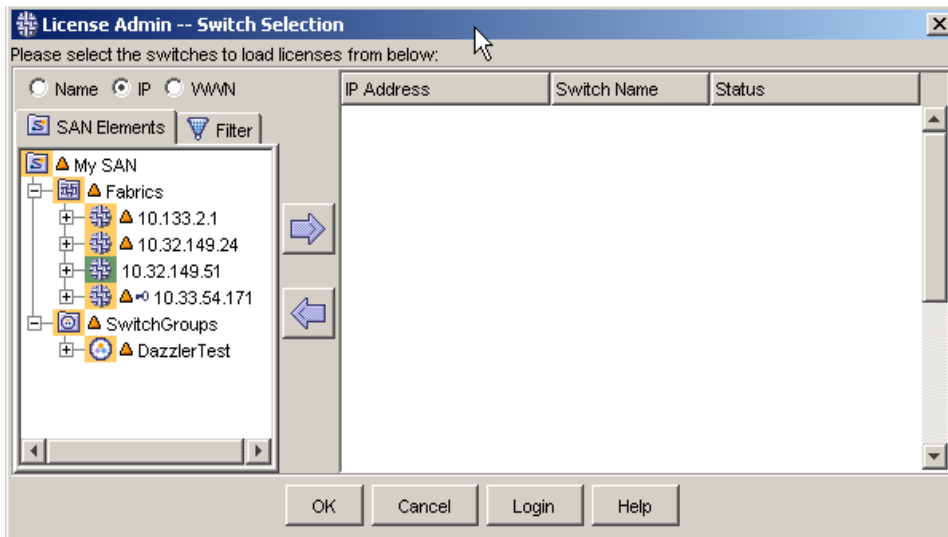


Figure 101 License administration (switch selection)

2. Select the switches and fabrics from the SAN Elements tab that have license keys that you want to export to a file.
3. Click the right-arrow to move the selected elements to the right-hand window and then click **OK**.

The License Administration window opens. Fabric Manager prompts you to log in to the switches if you are not already logged in.



NOTE: You can print license information about switches from the License Administration dialog box by clicking **Print**.

4. Select the **Switch** tab and then click the **Export to File** button.

The Export Licenses as an XML file dialog box opens.

5. Select a directory, enter a name for the file, and click **Export**.



CAUTION: Do not open or manually edit this file

Importing and restoring license keys (file-to-switch)

If you need to restore license keys to a switch, import them from the file where they were saved. See ["Exporting license keys \(switches-to-file\)"](#) on page 147 for additional information.

To import license keys from a file:

1. Select **Tools > Licensing > Import from File**.

The Import License – Select license file window opens (see [Figure 102](#)).

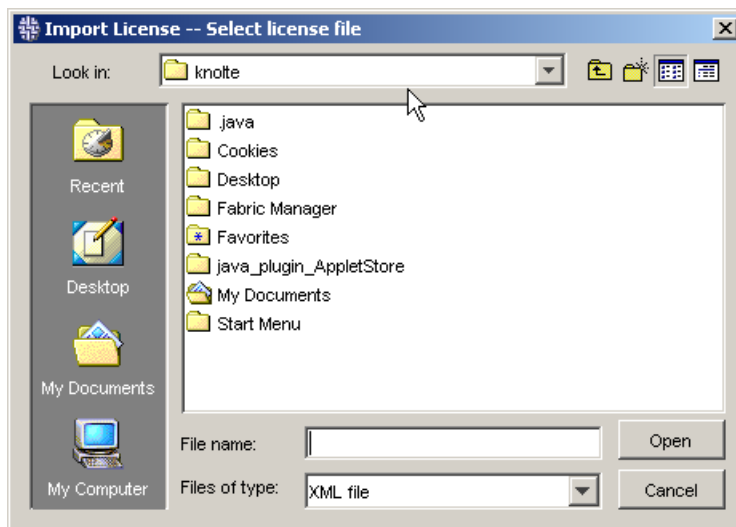


Figure 102 Importing a license

2. Navigate to your license key file (not displayed in [Figure 102](#)), select it, and click **Open**.

The License Administration window opens.



NOTE: You can print license information about switches from the License Administration dialog box by clicking **Print**.

3. Select the licenses that you want to download and click **Download to Switch**.

Fabric Manager loads the licenses to the selected switches. Fabric Manager prompts you to log in to the switches if you are not already logged in.

Removing license keys

To remove a license key and disable the functionality of a licensed feature:

1. Select **Tools > Licensing > Load from Switch**.

The License Admin – Switch Selection window opens (see [Figure 101](#) on page 148).

2. Select the switches and fabrics from the SAN Elements tab that have license keys that you want to have removed.
3. Click the right-arrow to move the selected elements to the right-hand window and then click **OK**.

The License Administration window opens.



NOTE: You can print license information about switches from the License Administration dialog box by clicking **Print**.

4. Select the **Switch** tab.
5. Select the licenses that you want to remove and click **Remove from Switch**.

Performing e-licensing

Electronic licensing (E-licensing) provides the ability to acquire licenses online for switch-based software features. You must already have purchased the licenses and obtained a transaction key in electronic format. Electronic transaction keys are provided as a file, typically delivered as an attachment to an e-mail.



NOTE: If your fabric infrastructure provider does not support the delivery of electronic transaction keys, E-licensing is not available.

To obtain licenses from transaction keys:

1. Request a transaction key file from your switch supplier.
2. Download the transaction key file from your e-mail to your client machine.
3. Log in to the switches that require a license. See ["Logging in to multiple switches simultaneously"](#) on page 130 for additional login information.
4. Select **Tools > Licensing > Generate Licenses**.

The Create License Request -- Select transaction key file or saved request dialog box opens (see [Figure 103](#)).

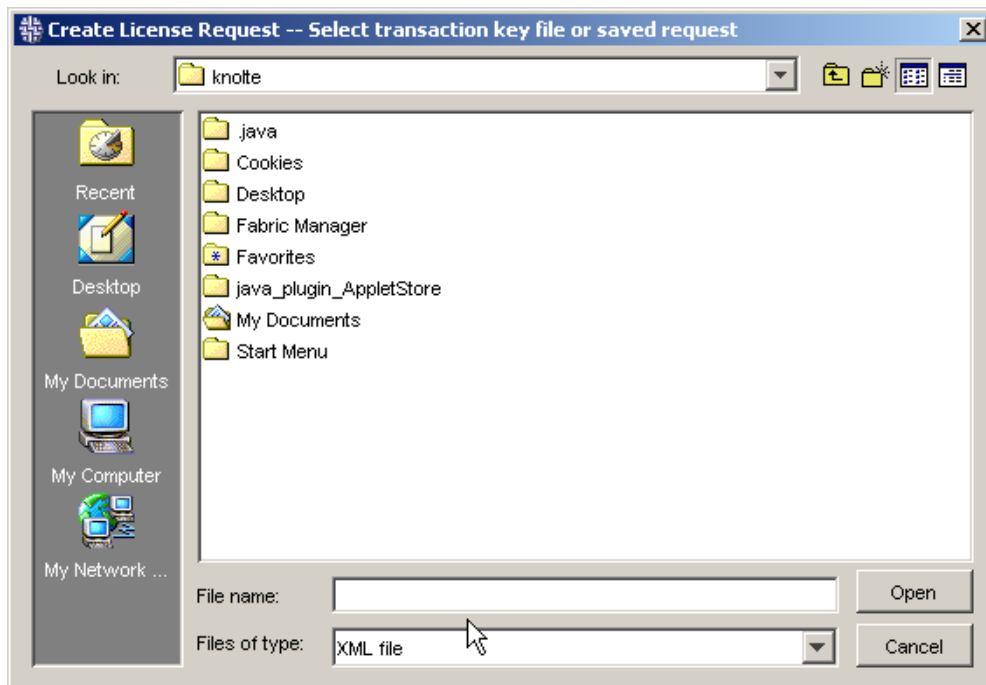


Figure 103 Select transaction key file dialog box

5. Open the transaction key files (not displayed in [Figure 103](#)).
The License Request Administration window opens and displays all of the features available within the transaction key files.
6. Select the features you want from the Feature Name column.
7. Click **Select Switches**.
Only the switches already discovered by Fabric Manager are displayed in the Switch Selection dialog box. Select the number of switches that match the number of transaction keys (per switch).
8. Select the switches from within the SAN Elements tab where you want to obtain the licenses and then click **OK**.
Fabric Manager prompts you to log in to the switches if you are not already logged in.
9. Do one of the following:
 - Click **Save Request** to save the License Request file in XML format and submit it later.
 - Click **Load TXN Key** to select another transaction key file or a saved License Request file.
 - Click **Submit** to submit the request. If you entered your e-mail address in the request, you will receive a record of licenses by e-mail.
 - Click **Reset** to remove any switches that you have entered in the Switches column and to reset the available quantity.The License Administration window opens.
10. Select the **Obtained Licenses** tab. All the licenses that you obtained are listed.
11. Select one or more licenses and then click **Download to Switch** to download the licenses to your switches.



NOTE: You must agree to a license agreement to obtain a Security license.

5 Firmware download administration

This chapter provides information about using Fabric Manager to download firmware to multiple switches and host bus adapters (HBAs).

The following sections contain firmware download specifics:

- [Downloading firmware to multiple switches](#), page 153
- [Controlling firmware download reboots](#), page 156
- [Downloading firmware to HBAs](#), page 156
- [Availability of firmware-specific features](#), page 158

Downloading firmware to multiple switches

Before you begin downloading firmware, verify that your task meets the following requirements:

- All switches that you choose to upgrade can run the firmware that you plan to download.
- All switches that you choose to simultaneously reboot reside on the same fabric.
- TCP/UDP Ports 20 and 21(FTP) are accessible between the Fabric Manager server and each switch.



CAUTION: If you are upgrading firmware from Fabric OS v3.0.0 to v3.1.0, or from Fabric OS v4.0.0 to v4.1.0, any port name changes that you have made in Fabric Manager are lost; this ensures that multiple Fabric Manager clients that are simultaneously active during the firmware upgrade do not overwrite each other's port names.

The firmware download to multiple switches feature is not supported for MP routers using Fabric Manager. If you attempt to download firmware on an MP router using Fabric Manager, Advanced Web Tools is launched. Refer to the *HP StorageWorks Fabric OS 4.x Advanced Web Tools user guide* for more information.

When you download firmware to multiple switches concurrently and then reboot the switches simultaneously, you use less time than if you update your switches individually.

To download firmware to multiple switches concurrently:

1. Copy the .zip file containing the firmware to the local host on which the Fabric Manager client is running.
2. Unzip the file and extract its contents to the FTP home directory.
You need to know where the FTP home directory is located before you unzip the file.
3. From the Tools menu, select **Firmware Download to Switches**.
The Firmware Download to Switches window opens (see [Figure 104](#)).

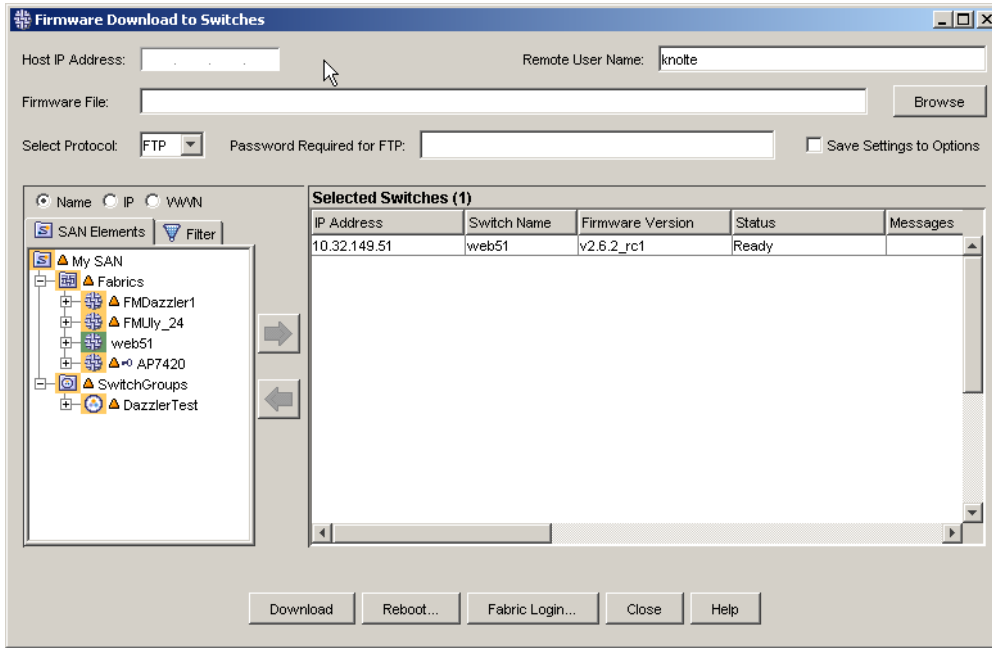


Figure 104 Firmware download to switches window

4. In the Host IP Address field, enter the local host IP address of the firmware file. If you have not configured file transfer options, select the **Save Settings to Options** check box to save your FTP settings as your file transfer options. See ["Configuring file transfer options"](#) on page 141 for additional information.



NOTE: You must click **Download** to commit the file transfer options. If you close this window, the file transfer options will not apply.

5. In the Remote User Name and Password Required for FTP fields, enter your user ID and password for the FTP server.
6. To populate the Firmware file field, click **Browse** to browse the local host and select the firmware file. For FOS v2.6.x and FOS v3.x switches, continue with [step 7](#). For FOS v4.x switches, skip to [step 9](#).
7. Depending on where your FTP home directory is located (for example, `c:\Inetpub\ftproot`), you probably unzipped the FOS 2.6.x or 3.x firmware file to a directory such as:
 - `C:/Inetpub/ftproot/2.6.x/v2.6.2` (where v2.6.2 is the firmware filename) or
 - `C:/Inetpub/ftproot/3.x/v3.2.0_rc1` (where v3.2.0_rc1 is the firmware filename)

The Firmware File field contains the path (except for the drive designation C:) if you use the Browse button to select the firmware file.

8. Delete the extra directory information (`/Inetpub/ftproot/`).

The Firmware File field should contain only one of the following (for v2.6x and v3.x switches respectively):

- `2.6.x/v2.6.2`
- `3.x/v3.2.0_rc1`

Skip to [step 12](#).

9. Depending on where your FTP home directory is located (for example, `c:\Inetpub\ftproot`), you probably unzipped the FOS 4.4.x firmware file to a directory such as:

`C:\Inetpub\ftproot\4.4.x\v4.4.0_rc1` (where `v4.4.0_rc1` is the firmware filename)

The Firmware File field contains the path (except for the drive designation `C:`), and the backslashes (`\`) are changed to forward slashes (`/`) if you use the Browse button to select the firmware file.

10.Delete the extra directory information (`/Inetpub/ftproot/`).

The Firmware File field should now contain only the following (for v4.x switches):

`4.4.x/v4.4.0_rc1`

11. Add `release.plist` to the end of the v4.x path:

`4.4.x/v4.4.0_rc1/release.plist`

12. From the Select Protocol menu, select **FTP**.

13. From the SAN Elements tab, select the switches that you want to upgrade and move them to the Selected Switches window. You can do this by:

- Clicking a switch and then clicking the right arrow.
- Dragging a switch from the SAN Elements tab into the Selected Switches window.
- Pressing and holding **Ctrl** while clicking multiple switches and then clicking the right-arrow.
- Pressing and holding **Ctrl** while clicking multiple switches and then dragging and dropping the switches from the SAN Elements tab into the Selected Switches window.
- Dragging and dropping a fabric from the SAN Elements tab into the Selected Switches window to add all of the switches from that fabric.



NOTE: If you want to download firmware to a dual-switch chassis, you only need to select one of its logical switches. Both switches are upgraded. If you add both of the logical switches from a dual-switch chassis to the Selected Switches window, you receive an error prompt when you click **Download**.

14. Click **Download**. For switches running firmware earlier than Fabric OS v4.0; you must click **Reboot** to open the Sequenced Reboot window when the download completes.



NOTE: If the switch loses network connectivity during the firmware download from Fabric Manager, the firmware download action times out after approximately 25 minutes for switches running Fabric OS v2.x or Fabric OS v3.x and after approximately 80 minutes for switches running Fabric OS v4.x. An error message is not returned when the firmware download is interrupted.

Controlling firmware download reboots

Switches running a firmware version earlier than Fabric OS v4.0 do not automatically reboot after a firmware download. You can create a download sequence to control the order that the switches reboot. See ["Performing a sequenced reboot"](#) on page 164 for additional information.

Downloading firmware to HBAs

Fabric Manager supports up to 50 firmware downloads to multiple HBAs simultaneously.

Emulex is the only vendor currently supporting Fabric Device Management Interface (FDMI) for their HBA. Emulex also has drivers for Windows 2000, 2003, and Solaris. Fabric Manager supports only the Emulex HBAs with the following drivers for the FDMI-based firmware downloads:

- Miniport Driver 5-5.02a3 (Windows 2000), Firmware 3.92A2
- Miniport Driver 5-1.02a3 (Windows 2000), Firmware 3.92A2
- Full Port Driver 5-2.22a8 (Windows 2000 and 2003), Firmware 3.9.2A2
- Solaris driver for Sparc systems version 6.00g, Firmware 3.92A2



NOTE: `lpfc.conf` must have `fdmi-on` set to 1 to turn on FDMI for the Solaris driver.

FDMI-capable HBAs must be connected to an FDMI-capable switch in order to get the FDMI functionality.

FDMI is disabled by default on the Emulex HBA. You must enable FDMI by using either the `elxcfg` or `lputil` tool.



CAUTION: If a host or switch connected to an HBA is rebooted during a firmware download to that HBA, the firmware in the HBA flash can become corrupted. The HBA will be unable to log back into the switch and/or respond to a query from the switch. Both Fabric Manager and the switch cannot see the HBA and it drops out of the Name Server list. If this occurs, use HBAnyware on the attached host and reload the firmware on the HBA.

To download firmware to one or more HBAs:

1. Log in to the switches with Fabric OS v3.1.0 (or later) or Fabric OS v4.1.0 (or later) already loaded and FDMI-capable HBAs connected to the switches. See ["Logging in to multiple switches simultaneously"](#) on page 130 for more information.

2. Select **Tools > Firmware download to HBAs**.

The Firmware Download to HBAs window opens (see [Figure 105](#)).

3. In the Host IP address field, enter the IP address of the FTP server where the firmware file resides.

The IP address displays automatically if you have already configured file transfer options. If you have not configured file transfer options, click the Save settings to options check box to save your FTP settings as your file transfer options. See ["Configuring file transfer options"](#) on page 141 for additional information.

4. In the User Name field, enter your user ID for the FTP server.

5. In the Firmware file field, enter the path and name of the firmware file (in UNIX format) or click **Browse** to navigate to the file.

Clicking Browse overrides the current settings for host IP address, user name and password. The information defaults to the current host system from which the Fabric Manager application is executed.

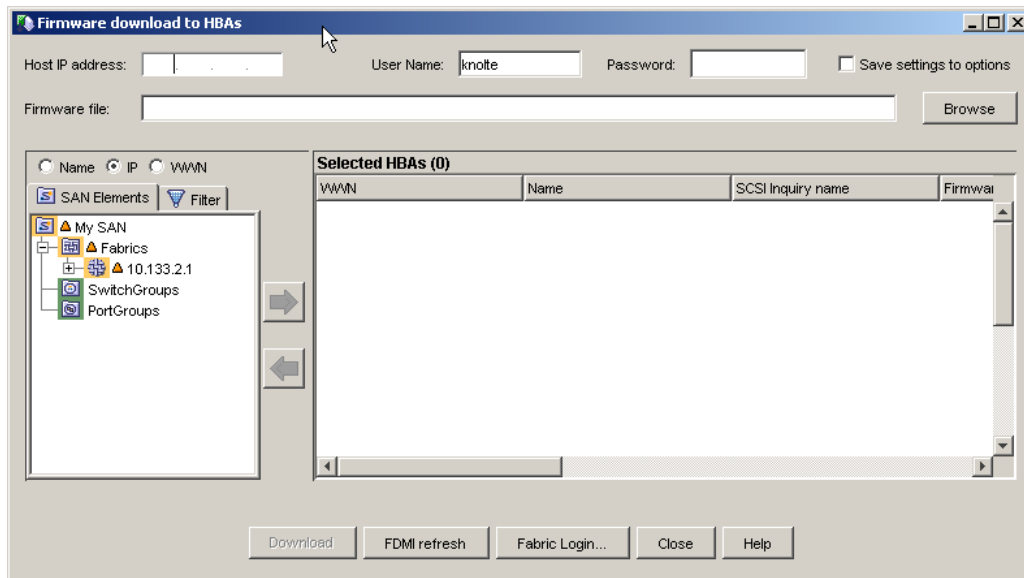


Figure 105 Firmware download to HBAs window

6. Enter your password in the Password field.
7. From the SAN Elements tab, select the HBAs that you want to upgrade and move them to the Selected HBAs window. You can do this by:
 - Clicking an HBA and then clicking the right-arrow.
 - Dragging and dropping an HBA from the SAN Elements tab into the Selected HBAs window.
 - Pressing **Ctrl** while clicking multiple HBAs and then clicking the right-arrow.
 - Pressing **Ctrl** while clicking multiple HBAs and then dragging and dropping the HBAs from the SAN Elements tab into the Selected HBAs window.
 - Dragging and dropping a fabric from the SAN Elements tab into the Selected HBAs window to add all of the HBAs from that fabric.



CAUTION: Simultaneous firmware download to one or more HBAs on the same host from multiple Fabric Manager clients is not supported and will most likely permanently corrupt the firmware on the HBAs, causing them to be unusable.

Non-FDMI capable HBAs appear with a grey background.

If Fabric Manager detects that a device is no longer in the Name Server, the device is displayed with a grey background in the Firmware Download to HBAs window until the device logs into the Name Server again.

8. Click the **Download** button to begin the firmware download. Fabric Manager prompts you with a confirmation dialog box.

9. Click **OK** to proceed or **Cancel** to abort. Fabric Manager provides a report of successful and unsuccessful downloads.
10. Click **Refresh FDMI** to refresh the Fabric Device Management Interface (FDMI) information within the Firmware Download to HBAs window for the selected HBAs.

Availability of firmware-specific features

Determining the firmware version to use depends on the features you need to manage your fabric. See [Table 38](#) contains a list of firmware-specific features and their supported firmware versions.

Table 38 Firmware-specific features

Feature	Firmware versions
Port name change on a switch	Fabric OS v3.1.0 and later Fabric OS v4.1.0 and later XPath OS v7.1.0 and later
Topology/ISL monitoring	Fabric OS v2.6.0k and later Fabric OS v3.02k and later Fabric OS v4.0, 4.1.0 and later
Security	Fabric OS v2.6.x Fabric OS v3.1.0 and later Fabric OS v4.1.0 and later
Enabling Secure Mode	Fabric OS v4.2.x or later
Port swapping	Fabric OS v4.1.0 and later
FDMI/ HBA Firmware Download	Fabric OS v3.1.0 and later Fabric OS v4.1.0 and later
Performance Monitoring (Port Statistics)	Fabric OS v2.6.x and later Fabric OS v3.1.0 and later Fabric OS v4.2.0c and later ¹
Performance Monitoring (End-to-End)	Fabric OS v3.x ² Fabric OS v4.x ²
Quickloop	Fabric OS v2.x ³ Fabric OS v3.x ³
Multi-protocol Router	XPath OS v7.1.0

Table 38 Firmware-specific features (continued)

Feature	Firmware versions
Change Management configuration checking: The Fabric Manager server uses API libraries to get switch configuration and security policy information from switches. If a fabric has a switch running firmware versions 2.6.x or earlier, 3.0 or earlier, or XPath OS v7.1.0, Change Management switch configuration checking is not supported. Fabric Manager uses one switch in the fabric to collect security policy information through API. Fabric Manager cannot collect security policy information for a fabric if the switch it selects is running firmware versions 2.6.x or earlier, 3.0 or earlier, or XPath OS v7.1.0 because API does not support those versions of firmware, or that switch type.	Fabric OS v2.6.x and later Fabric OS v3.1.0 and later
SupportShow information in Fabric Manager	Fabric OS v3.1.0 and later Fabric OS v4.1.0 and later XPath OS v7.1.0
<p>¹Performance Monitoring port statistics return incorrect values for Fabric OS v4.x to 4.2.0b. Firmware versions v4.2.0c or later work correctly.</p> <p>²The launch switch must be running Fabric OS v3.x/4.x or later for End-to-End Performance Monitoring to be enabled.</p> <p>³The QuickLoop feature can be implemented only on switches running Fabric OS v2.x/3.x; however, when using a launch switch running Fabric OS v4.x, you can see the Fabric OS v2.x/3.x switches in QuickLoops.</p>	

6 Reboot administration

This chapter provides information on creating reboot groups and performing sequenced reboots. A reboot group contains one or more switches from a single fabric. You cannot group switches from different fabrics; each switch can belong only to one reboot group.

A sequenced reboot allows different areas of your SAN to reboot and stabilize before other switches in the fabric begin to reboot. This reduces the load of inter-switch traffic on the SAN.

Create a reboot group containing multiple switches from the same fabric if you want the selected switches to reboot simultaneously. You may want to create reboot groups containing switches that run the same firmware, serve the same function, reside in the same physical location, or share any other attribute. After creating reboot groups, you can then configure a sequential reboot of the reboot groups.

A sequenced reboot allows different areas of your SAN to reboot and stabilize before other switches in the fabric begin to reboot. This reduces the load of inter-switch traffic on the SAN. For example, you can use the following reboot strategies:

- Simultaneously reboot switches that run the same firmware.
- Simultaneously reboot switches of the same model.
- Reboot the core switches of a fabric, then the edge switches.
- Reboot the backbone of a large SAN, then reboot other sections.
- Reboot distant physical locations sequentially.

Consult the following sections for information about creating reboot groups containing single or multiple switches, adding switches to existing reboot groups, and configuring a sequenced reboot:

- [Creating a reboot group with multiple switches](#), page 161
- [Creating single switch reboot groups](#), page 163
- [Assigning switches to a reboot group](#), page 164
- [Performing a sequenced reboot](#), page 164

Creating a reboot group with multiple switches

Create a reboot group containing more than one switch if you want the switches to reboot simultaneously.

To create a reboot group:

1. Select **Tools > Reboot > Create Reboot Sequence**.

The Create or change reboot groups and sequence window displays (see [Figure 106](#)).

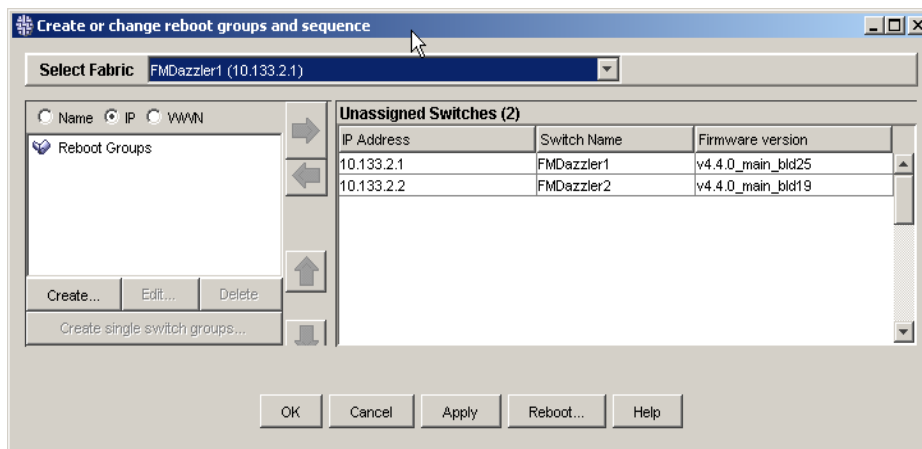


Figure 106 Create or change reboot groups and sequence

2. Select a fabric from the Select Fabric menu.
3. Click **Create**.

The Create reboot group dialog box opens (see [Figure 107](#)).

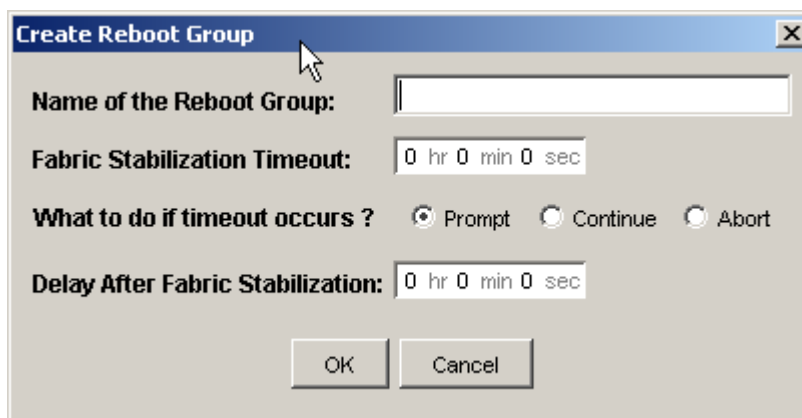


Figure 107 Create Reboot Group dialog box

4. In the Name of the Reboot Group field, enter a name for the reboot group.
5. In the Fabric Stabilization Timeout field, specify the amount of time for the fabric to stabilize.
6. Optional: In the What to do if timeout occurs? field, click one of the following buttons:
 - **Prompt** (the default selection), which provides a prompt whenever a timeout occurs that asks if you want to continue.
 - **Continue**, which continues the reboot sequence when a timeout occurs.
 - **Abort**, which terminates the reboot sequence when a timeout occurs.
7. In the Delay After Fabric Stabilization field, enter the amount of time that must elapse before the next reboot in the sequence begins.

Fabric Manager considers a fabric stable when all WWNs appear in the fabricshow command output.

8. Click **OK**.

Your reboot group is displayed in the Reboot Groups tree.

The reboot groups listed in the Reboot Groups tree include bracketed text displayed next to the name of the reboot group. The bracketed text represents the duration of the fabric stabilization timeout, the timeout option (see [step 6](#)), and the duration of the delay after fabric stabilization time that you configured. For example:

[1m , P , 2m]

Where 1m indicates a stabilization timeout of one minute, P identifies the timeout option (see [step 6](#)), and 2m indicates that two minutes will elapse before the next reboot in the sequence begins.

Creating single switch reboot groups

Create a single switch reboot group for any switch in your fabric that is not assigned to a multi-switch reboot group if you want to include it in a reboot sequence.

To create a single switch reboot group:

1. Select **Tools > Reboot > Create Reboot Sequence**.

The Create or change reboot groups and sequence window opens (see [Figure 106](#) on page 162).

2. Select a fabric from the Select Fabric menu.

3. Select a switch from the list of Unassigned Switches. To create more than one single-switch reboot group, select multiple switches. Each switch is made into its own single-switch reboot group.

4. Click the **Create single switch groups** button. The Create Single Switch Reboot Groups dialog box opens (see [Figure 108](#)).

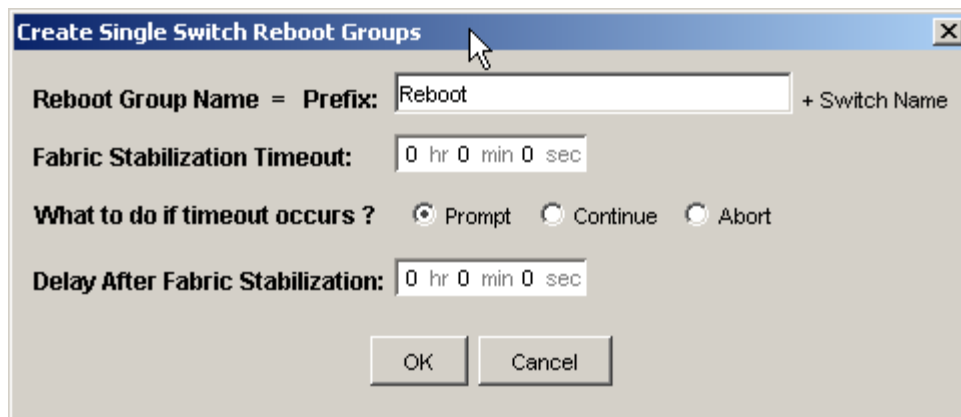


Figure 108 Create Single Switch Reboot Groups dialog box

5. Optional: In the Reboot Group Name field, enter a name for the reboot group. If you do not enter a name for the reboot group, a default name is assigned in the Reboot SwitchName format, where SwitchName is the name of the switch. You must provide a name for each single-switch reboot group you create. If a name is not selected, the single-switch reboot groups are named for you (Reboot SwitchName).

6. In the Fabric Stabilization Timeout field, specify the amount of time for the fabric to stabilize.

7. Optional: In the What to do if timeout occurs? field, click one of the following buttons:
 - Prompt (the default selection), which provides a prompt whenever a timeout occurs that asks if you want to continue.
 - Continue, which continues the reboot sequence when a timeout occurs.
 - Abort, which terminates the reboot sequence when a timeout occurs.
8. In the Delay After Fabric Stabilization field, enter the amount of time that must elapse before the next reboot in the sequence begins.

Fabric Manager considers a fabric stable when all WWNs appear in the fabricshow command output.
9. Click **OK**.

Your reboot group is displayed automatically in the Reboot Groups tree.

The reboot groups listed in the Reboot Groups tree include bracketed text displayed next to the name of the reboot group. The bracketed text represents the duration of the fabric stabilization timeout, the timeout option (see [step 6](#)), and the duration of the delay after fabric stabilization time that you configured. For example:

```
[ 1m , P , 2m ]
```

In this example, 1m indicates a stabilization timeout of one minute, P identifies the timeout option (see [step 7](#)), and 2m indicates that two minutes will elapse before the next reboot in the sequence begins.

Assigning switches to a reboot group

To assign switches to an existing reboot group:

1. Select **Tools > Reboot > Create Reboot Sequence**.

The *Create or change reboot groups and sequence* window opens (see [Figure 106](#) on page 162).

2. Select a fabric from the Select Fabric menu.

The switches in that fabric display in the Unassigned Switches list.

3. Select the reboot group that you want to populate.

4. Click a switch that you want to add to the reboot group, click the left-arrow and then click **OK** to save the changes and apply them later or click **Apply** to save the changes and apply them immediately.

To add multiple switches simultaneously, press-and-hold **Ctrl** and click each switch that you want to add, then click the left-arrow.

Performing a sequenced reboot

To set up a sequenced reboot:

1. Log in to the switches that you want to reboot. See "[Logging in to multiple switches simultaneously](#)" on page 130 for additional information.
2. Select **Tools > Reboot > Sequenced Reboot**.

The Sequenced Reboot window opens (see [Figure 109](#)).

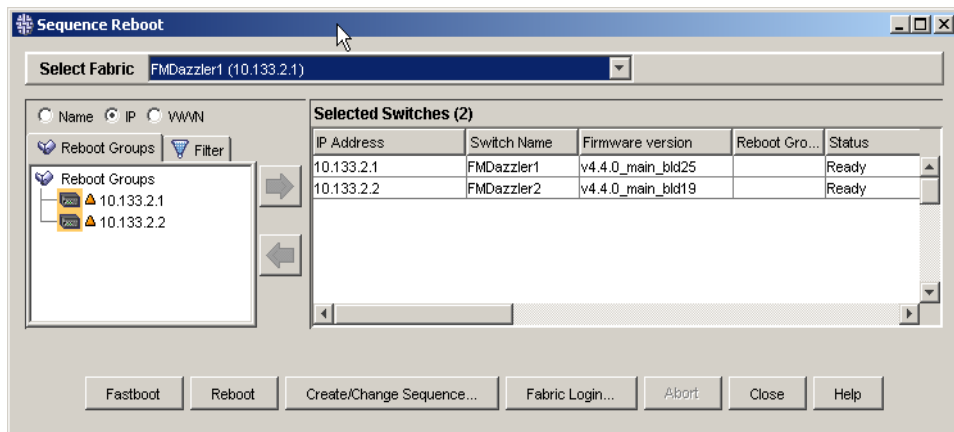


Figure 109 Sequenced Reboot window

3. Select a fabric from the Select Fabric menu.
4. From within the Reboot Groups tab, click the reboot group that you want to reboot first, then click the right-arrow to add it to the Selected Switches list.
5. Repeat [step 4](#) to add additional groups in the sequence that you want them to reboot.
6. Optional: To rearrange the order of the reboot sequence, click **Create/Change Sequence**.
Select the reboot group you want to move and use the up and down arrows to place it in the sequence you want.
7. Click **Fastboot** or **Reboot** to begin the sequenced reboot.

You are prompted several times by Fabric Manager to ensure that you want to continue. The prompt messages advise you of any potential problems in your fabric.

A message displays at the end of the reboot sequence to list of successful and unsuccessful reboots.

7 Name Server

Fabric Manager launches Advanced Web Tools to display name server entries listed in the Simple Name Server database (see [Figure 110](#)). [Table 39](#) provides a description of the Name Server Table. This chapter provides Web Tools instructions for switches running Fabric OS v4.4.0. If you have switches running other versions of firmware, refer to the *HP StorageWorks Fabric OS 4.x Advanced Web Tools user guide* supporting the appropriate version of firmware.

Consult the following sections for information on how to display specific name server information:

- [Displaying name server entries](#), page 169
- [Displaying name server information for a device](#), page 169
- [Name server information for a device](#), page 169

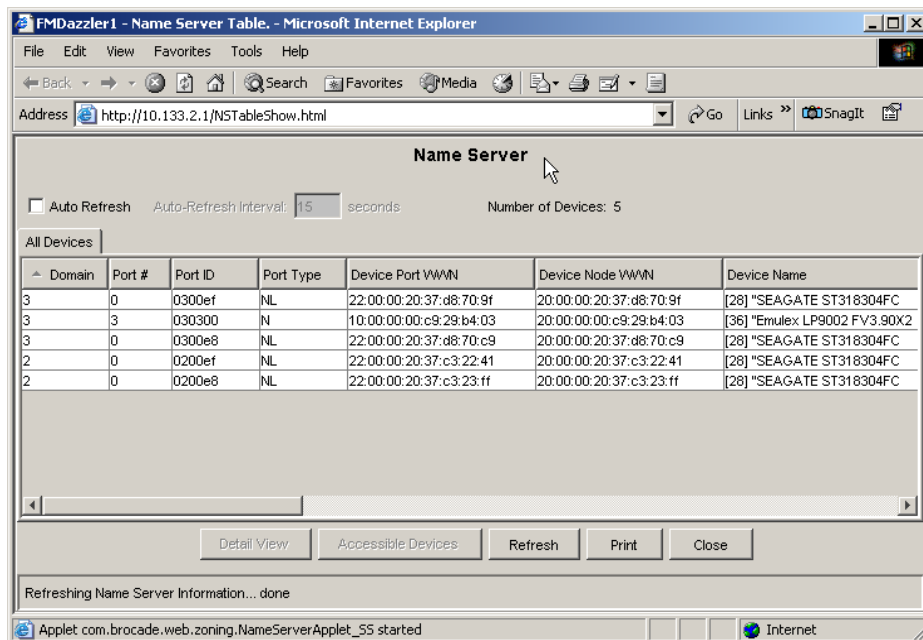


Figure 110 Name server view

Table 39 Description of name server view

Field or button	Description
Auto Refresh	Check to enable Auto Refresh. Un-check to disable Auto Refresh.
Auto Refresh Interval	Enter the number of seconds for the refresh interval if Auto Refresh is checked. The minimum interval is 15 seconds.
Number of Devices	The number of devices displayed in the table.
Domain #	The domain ID of the switch to which the device is connected.
Port #	The number of the switch port to which the device is connected.
Port ID	The port ID of the device (24-bit hexadecimal value).

Table 39 Description of name server view (continued)

Field or button	Description
Port Type	The port type of the device, where: N= fabric direct attached port NL= fabric direct attached loop port
Device Port WWN	The worldwide name of the device port.
Device Node WWN	The worldwide name of the device node.
Device Name	The symbolic name of the device assigned through the SCSI inquiry command.
FDML Host Name	The name of the host from which the device originates (applies only to FDML-1 standard devices).
WWN Company ID	The name of the device vendor. This name is derived from the device WWN.
Virtual vs. Physical	Indicates the device as Physical or Virtual.
Host vs. Target	Indicates the device as Host or Target.
Member of Zones	The zones to which this device belongs. This column does not update when the table is refreshed. To view updated zoning information, close and reopen the Name Server Table.
Member of Aliases	The names of the aliases from which the device is a member.
FC4 Types	The Fibre Channel FC4 layer types supported by the device, such as IP or FCP.
Class of Service	The Fibre Channel classes of service supported by the device.
Fabric Port Name	The fabric port name (if applicable).
Fabric Port WWN	The worldwide name of the fabric port.
Port IP Address	The IP address of the fabric port.
Hard Address	The hard address (if applicable).
Detail View	Detailed information specific to the device selected.
Accessible Device	Accessible zone member information specific to the selected device.
Refresh	Select to refresh the window immediately.
Print	Print the Name Server Table.
Close	Select to close the window.

Displaying name server entries

To display name server entries:

1. Click the fabric with the name server entries you want to see from the SAN Elements tab.
2. Select **Actions > Name Server**.

Web Tools launches and displays the Name Server Table for the fabric selected (see [Figure 110](#) on page 167). The Name Server Table lists all name server entries for the fabric, not only those related to the local domain. Each row in the table represents a different device. See [Table 39](#) for additional information about the Name Server Table.

3. Optional: Select the **Auto Refresh** check box in the Name Server Table.

Enter an auto refresh interval, with a minimum of 15 seconds. The Name Server entries refresh at the rate you set.



NOTE: By default, Name Server entries are not automatically polled. You must click Refresh from the Name Server Table to poll Name Server entries or set the Auto Refresh option.

Displaying name server information for a device

To display *Name Server* information for a particular device:

1. Click the fabric with the name server entries you want to see from the SAN Elements tab.
2. Select **Actions > Name Server**.

Web Tools launches and displays the Name Server Table for the fabric selected (see [Figure 110](#) on page 167).

3. Select a device from the Domain column, then click the **Detail View** button to access the Name Server Information window (see [Figure 111](#)). You can also access the Name Server Information window by selecting the domain you want, right-clicking anywhere on the selected row, and clicking the **Detail View** selection.

The Name Server Information dialog box opens and displays information specific to the selected device.

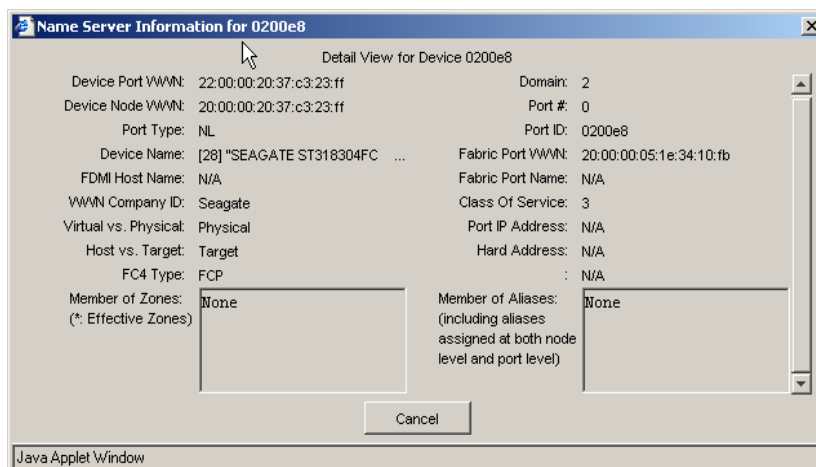


Figure 111 Name server information for a device

Displaying zone members of a device

To display the Zone Members of a device:

1. Select the fabric with the name server entries you want to see from the SAN Elements tab.
2. Select **Actions > Name Server**.

Web Tools launches and displays the Name Server Table for the fabric selected (see [Figure 110](#) on page 167).

3. Select a device from the Domain column and then click the **Accessible Devices** button to access the Zone Accessible Devices window (see [Figure 112](#)). You can also access the Zone Accessible Devices window by selecting the domain you want, right-clicking anywhere in the selected row, and clicking the **Accessible Devices** selection.

The Zone Accessible Devices dialog box opens and displays any accessible zone member information specific to the selected device.

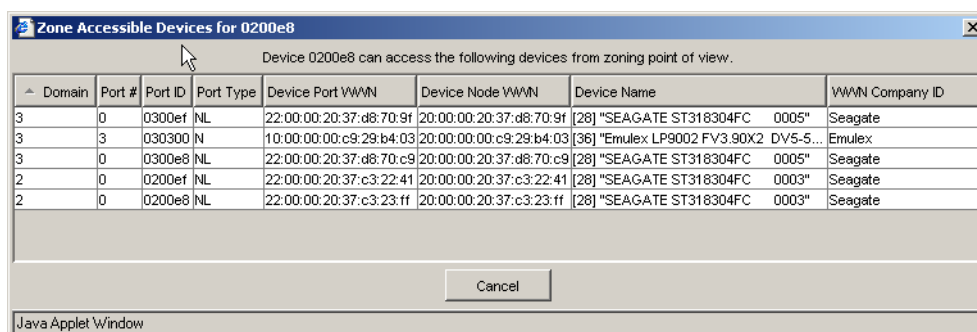


Figure 112 Zone Accessible Devices dialog box

8 Topology management

The chapter provides information about the Topology view within Fabric Manager. The Topology view (see [Figure 70](#) on page 91) provides a graphical representation of the elements that Fabric Manager monitors and all of their connections (see [Figure 113](#)). This includes logical SANs (LSANs) and any virtual switches and links associated with them.

Each Topology view consists of nested windows and element icons that can be viewed or hidden using an expand (+) or collapse icon (-). The Topology view also includes the Standard that are displayed in each view within Fabric Manager (see [Table 8](#) on page 72), and its own set of icons as described in [Table 21](#) on page 91.

Consult the following sections for information about the using *Topology* view:

- [Viewing fabric topologies](#), page 171
- [Configuring topology views](#), page 174
- [Taking topology snapshots](#), page 175

Viewing fabric topologies

To view fabric topologies that have been discovered by Fabric Manager:

1. Select a SAN or fabric from the SAN Elements tab.

The selected SAN or fabric node information is displayed.

2. Select **View > Topology** or click **Topology** directly from the View selector bar (see [Figure 59](#) on page 78).

The Topology view displays a topological view of the SAN or fabric you selected from within the SAN Elements tab.



NOTE: Depending on the size of your fabric, the Topology view can open and respond slowly.

Within Topology view, you can perform the following tasks to view more information about your fabric:

- Click and hold on any element in the view to display a Tooltip. Tooltips provide basic information about the element that you clicked. [Figure 113](#) displays the speed of a link between two switches (and identifies the port number of each connection). Tooltips disappear when you release the mouse button. Tooltips are disabled while you use the Select, Pan, or interactive zoom features (Zoom in rectangle, Zoom in, Zoom out, Fit to view, and Overview) as described in [Table 21](#) on page 91.

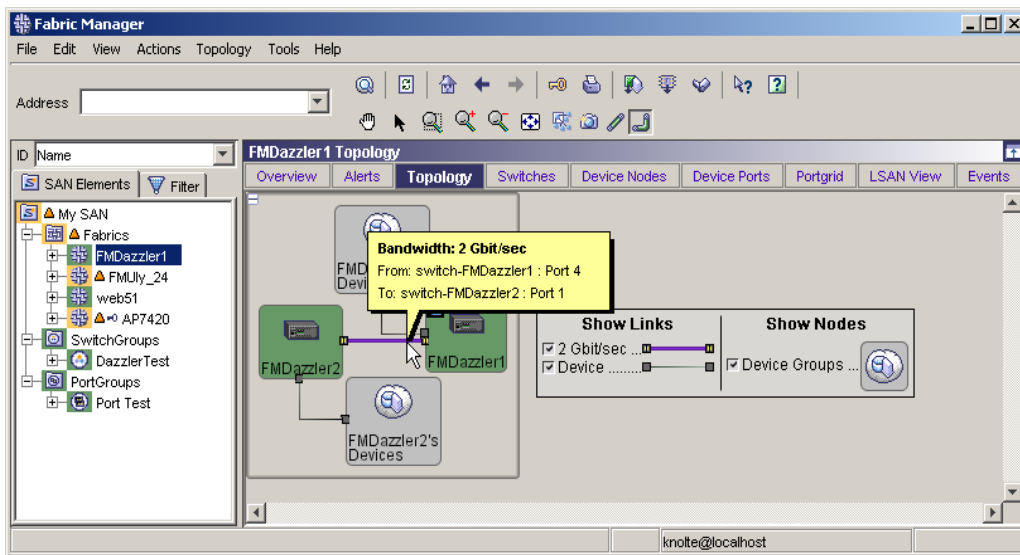


Figure 113 Tooltip for link

- Double-click a device group (cloud) icon to open a window that displays a list of all the devices attached to that switch (see [Figure 114](#)). Each switch that has at least one device attached to it has a device group (cloud) icon attached to it. This window also provides a Print option.

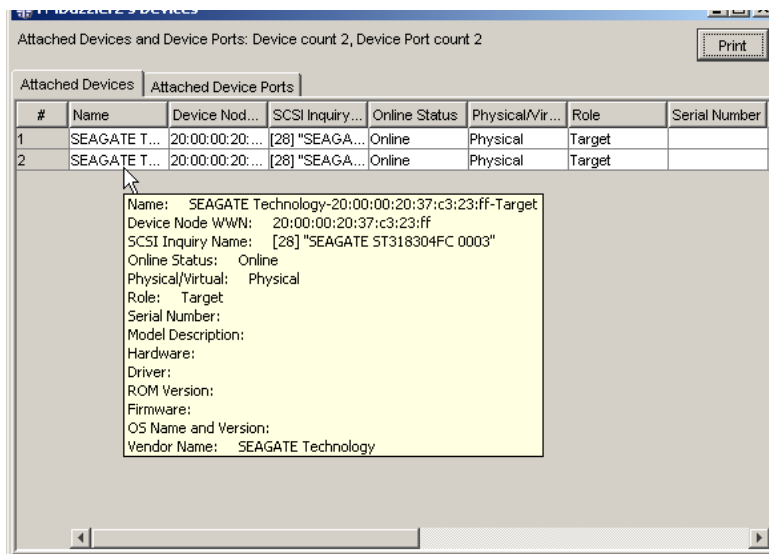


Figure 114 Device groups



NOTE: Place your cursor in any row within [Figure 114](#) and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry). See ["Enabling and disabling table view tooltips"](#) on page 123 for information on enabling and disabling tool tips.

- Double-click a bundled link to view the individual links that compose the bundle. Double-click the individual links to view the bundle again (see [Table 40](#)). When you double-click a bundle, you can then view tool tips on each individual link. The tool tip includes the bandwidth, and the ports and switches where the ISL connects. You cannot expand a bundle when you engage the Select icon.

- Click the Select icon in the toolbar to move nodes in the display. Fabric Manager stores the changes that you make to the locations of the nodes.
- Click the Snapshot icon to save an image file of your topology. You can use this file as a baseline and compare your fabric to it at a later time. See ["Taking topology snapshots"](#) on page 175 for additional information.
- From the Layout menu, select **Circular**, **Core-Edge**, or **Tree** to view your fabrics from different perspectives. See [Table 41](#) on page 175 for additional information.
- Select the Overview icon from the Topology menu if it is difficult to view an entire fabric in the Topology view. A small window displays the entire fabric in a miniature (or zoomed out) format. This tool includes a gray box that you can drag over the portions of the fabric you want to have displayed in the larger Topology view. This tool helps you pinpoint the portion of a large fabric that you want to view.

Table 40 Topology view link images

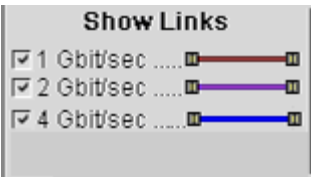
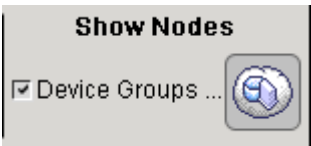


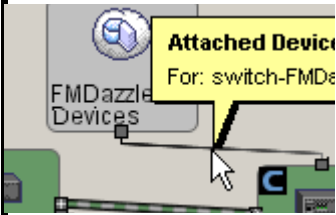
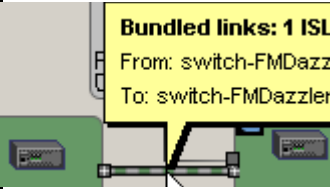

Images from Topology view	Description
	<p>Show Links legend</p> <p>Represents the link speed between two switches using the Gbps format:</p> <p>Red = 1 Gbps Purple = 2 Gbps Blue = 4 Gbps</p>
	<p>Show Nodes legend</p> <p>If you do not want the Device groups to be displayed in the Topology view, un-check this check box.</p>
	<p>Device groups</p> <p>Represents the devices that connect to a switch. Double-click the device group to open a window that displays all of the devices connected to the switch in table format.</p>
	<p>Trunked links</p> <p>Represents a trunk between two switches.</p>
	<p>Device links</p> <p>Represents the link between a switch and the devices that connect to it.</p>

Table 40 Topology view link images (continued)

Images from Topology view	Description
	Bundled links Represents all links between two switches to reduce clutter in the topology display. Double-click the bundle to expand it.
	Expanded links Displays the individual links that form a bundle. Double-click the expanded bundle to collapse the links into a bundle.

Configuring topology views

To configure Topology view options:

1. Select **File > Options**.

The Options dialog displays (see [Figure 115](#)).

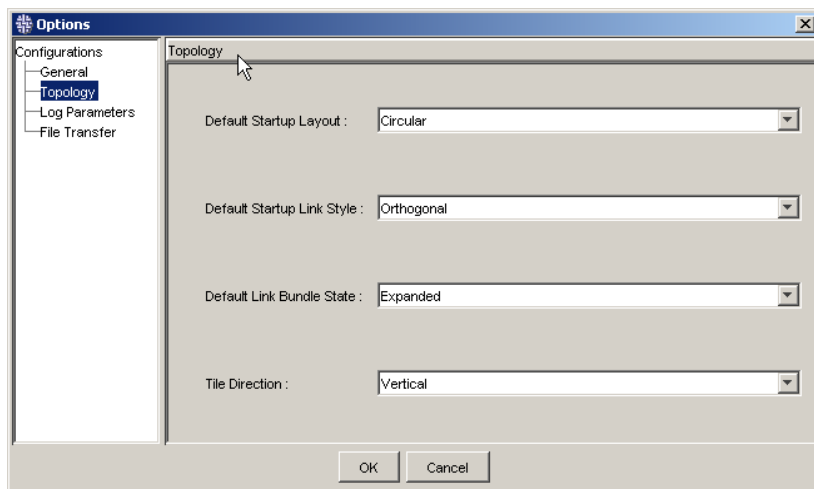


Figure 115 Topology view options

2. Click **Topology** from the Configurations tree in the left window.
3. Select a layout from the Default Startup Layout menu. The available options are **Circular**, **Core-Edge**, and **Tree**. See [Table 41](#) for a description of different topology layouts.
4. Select a link style from the Default Startup Link Style menu. The available options are **Orthogonal** and **Straight**. See [Table 70](#) on page 91 for a description of orthogonal and straight links.
5. Select a link bundle state from the Default Link Bundle State menu. The available options are **Expanded** and **Collapsed**. See [Table 40](#) on page 173 for a description of expanded and collapsed links.



NOTE: Any existing bundled links do not change automatically to reflect your selection. You must change them manually within Topology view. The bundled links that are added after you define the link bundle state are displayed with the format you selected.

6. Select the direction you want the element icons to flow in the Topology view from the Tile Direction menu. This is known as the tile direction. The available options are Vertical and Horizontal.
7. Click **OK**.

Table 41 Topology view layout styles

Layout	Description
Circular	Lays out the ring/star topologies in a way that preserves the visual identity of each cluster and avoids overlapping nodes and clusters.
Core-Edge	<p>The core-edge layout separates core switches, edge switches, and nodes visually.</p> <p>By default, when a nonsecure fabric is discovered, all switches with attached devices are labeled as <i>edge switches</i>. All switches without attached devices are labeled as <i>core switches</i>.</p> <p>All switches defined in the FCS policy of a secure fabric are considered core switches. Any switches with devices attached to them are automatically considered edge switches. You can assign a core switch manually. See "Designating a core switch" on page 134 for additional information.</p>
Tree	Organizes the fabric hierarchically.



NOTE: Core switches can be viewed only when the Default Startup Layout menu is set to Core-Edge. Core switches are identified in all topology layouts by a bold **C** in the top-left corner of the node. See "[Designating a core switch](#)" on page 134 for information on assigning a switch manually as a core switch.

Taking topology snapshots

To take a snapshot of a topology:

1. Select a SAN or fabric from the SAN Elements tab.
The selected SAN or fabric node information is displayed.
2. Select **View > Topology** or click **Topology** directly from the View selector bar.
The Topology view displays a topological view of the SAN or fabric you selected from within the SAN Elements tab (see [Figure 68](#) on page 88).
3. Click the snapshot icon from the Topology toolbar.
The Snapshot window displays (see [Figure 116](#)).

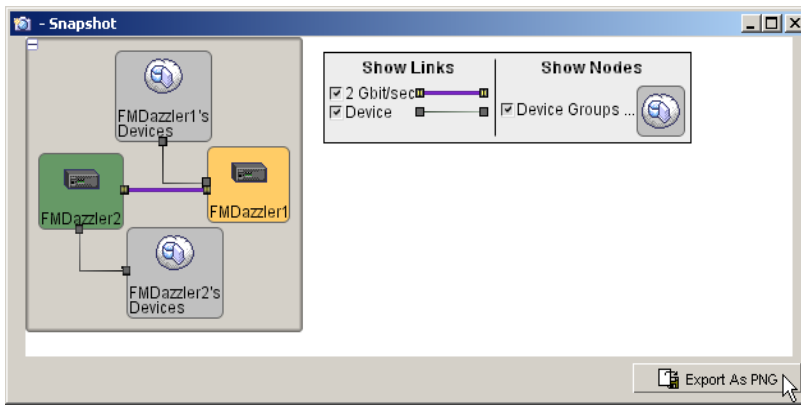


Figure 116 Topology snapshot



NOTE: The snapshot captures only the viewable elements in the current Topology window. Any items not visible in the window are not captured.

4. Click the **Export to PNG** icon.

The Export as PNG file window opens (see [Figure 117](#)).

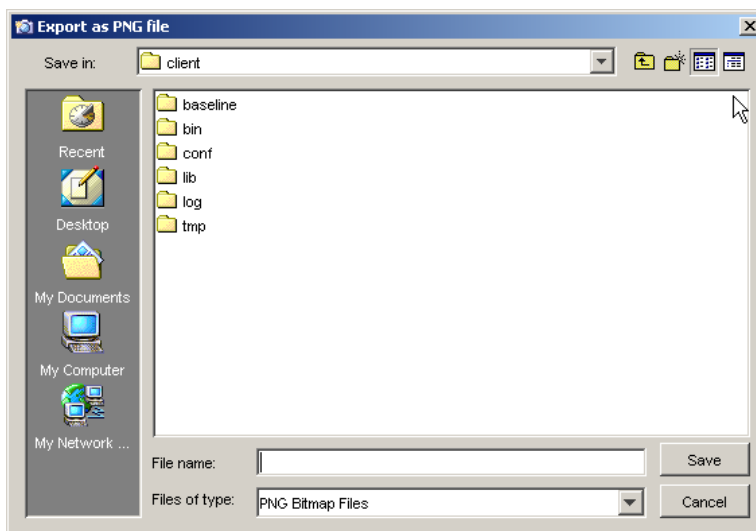


Figure 117 Export topology snapshot

5. Save a Portable Network Graphic (.png) version of the topology snapshot to a folder.

9 Fabric Watch administration

Fabric Watch is an optional, licensed feature that monitors the performance and status of switches and can automatically alert you when problems arise. Fabric Watch tracks a variety of SAN fabric elements, events, and counters. For example, Fabric Watch monitors:

- Fabric resources, including fabric reconfigurations, zoning changes, and new logins.
- Switch environmental functions such as temperature, power supply, and fan status, along with security violations.
- Port state transitions, errors, and traffic information for multiple port classes as well as operational values for supported models of Finisar “Smart” GBICs and SFPs.
- Performance information for AL_PA, end-to-end, and SCSI command metrics.

Fabric Watch lets you define how often to measure each switch and fabric element and to specify notification thresholds. Whenever fabric elements exceed these thresholds, Fabric Watch automatically provides notification using several methods, including e-mail messages, SNMP traps, and log entries.

Fabric Manager launches Advanced Web Tools to configure Fabric Watch. This chapter provides Fabric Watch instructions (using Web Tools via Fabric Manager) for switches running Fabric OS v4.4.0. If you have switches running an earlier version of the Fabric OS, refer to the *HP StorageWorks Advanced Web Tools user guide* supporting the corresponding version.

This chapter provides information about using Fabric Watch, configuring thresholds, alarms, and e-mail notifications, and displaying alarm information. Consult the following sections:

- [Using Fabric Watch with Advanced Web Tools](#), page 178
- [Launching the Fabric Watch module](#), page 185
- [Configuring Fabric Watch thresholds](#), page 186
- [Configuring alarms for FRUs](#), page 188
- [Displaying Fabric Watch alarm information](#), page 188
- [Configuring e-mail notifications](#), page 189



NOTE: You must have a Fabric Watch license installed on your switch to use the Fabric Watch feature.

For more detailed information regarding Fabric Watch, refer to the *HP StorageWorks Fabric OS 4.x Fabric Watch user guide*.

Using Fabric Watch with Advanced Web Tools

You can administer Fabric Watch operations through the Fabric Watch module in Web Tools. This section provides information about the Fabric Watch module (see [Figure 118](#)).

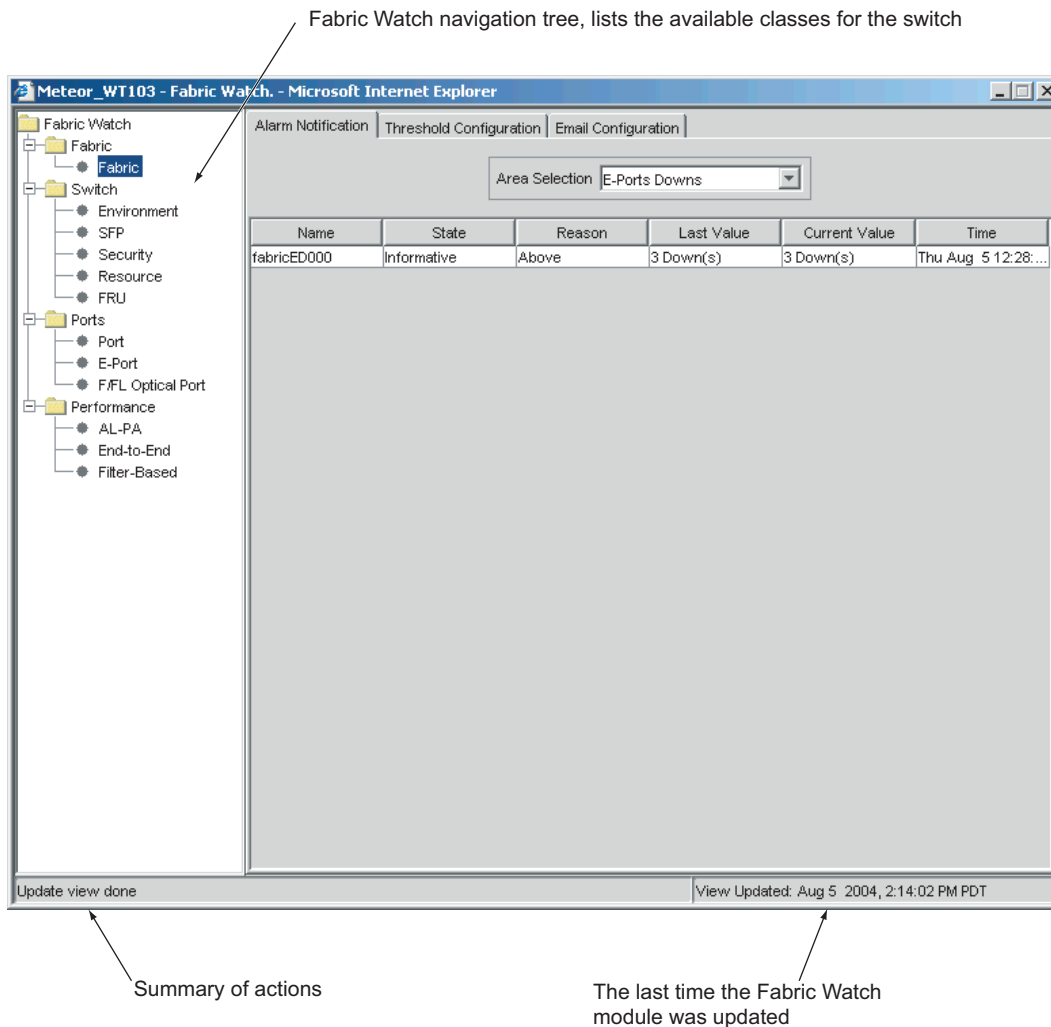


Figure 118 Fabric Watch module with alarm notification tab displayed

The Fabric Watch navigation tree, on the left side of the module, displays the available classes. The classes are organized in a set of folders. Not all classes are available for all switches.

Use the Fabric Watch module if you want to:

- Configure custom threshold values on particular elements.
- Place limits on the acceptable values of those elements and enable the custom limits (configure threshold boundaries).
- Choose whether and how Fabric Watch alerts you to errant values (configure alarms).
- Choose whether and how frequently Fabric Watch identifies unacceptable values (configure threshold traits).

Table 42 lists and describes the components of the Fabric Watch window with the Alarm Notification tab selected.

Table 42 Fabric Watch window components

Component	Description
Fabric Watch navigation tree	Displays the various Fabric Watch classes that you can configure.
Alarm Notification tab	Displays Fabric Watch alarms that fabric events have triggered.
Threshold configuration tab	Lets you configure threshold boundaries, traits, and alarms.
E-mail configuration tab	Lets you configure the Fabric Watch Email alert alarm.

Alarm notification tab

Use the Alarm Notification tab of the Fabric Watch window (see Figure 118 on page 178) to view the information for all Fabric Watch elements and classes. The Alarm Notification tab polls current events from Fabric Watch and refreshes the display according to the threshold configuration. Table 43 lists and describes the components of the Alarm Notifications tab.

Table 43 Alarm notification tab component descriptions

Component	Description
Selected area pulldown menu	Displays the configurable areas in the menu. The items listed change, depending on the item selected in the navigation tree.
Name column	Displays the name of the alarm. Threshold names consist of the following three parts, with no separators: <ol style="list-style-type: none">1. Class name abbreviation2. Area name abbreviation3. Element index number
State column	Displays the severity of the alarm that governs the kind of traps Fabric Watch employs for a response to an event. The state of the alarm can be Informative, Normal, or Faulty.
Reason column	Displays the reason that an alarm notification was sent, such as Started, Changed, Exceeded, Below, Above, or In between.
Last Value column	Displays the value of a counter (behavior variable) prior to the alarm.
Current Value column	Displays the value of the counter (behavior variable) that set off the alarms.
Time column	Displays the time and date the notification was sent from the switch.

Threshold configuration tab

Use the Threshold Configuration tab (see Figure 119) to view and configure Fabric Watch thresholds for the Fabric Watch class that you select in the Fabric Watch navigation tree. Table 44 lists and describes the components of the Threshold Configuration tab.

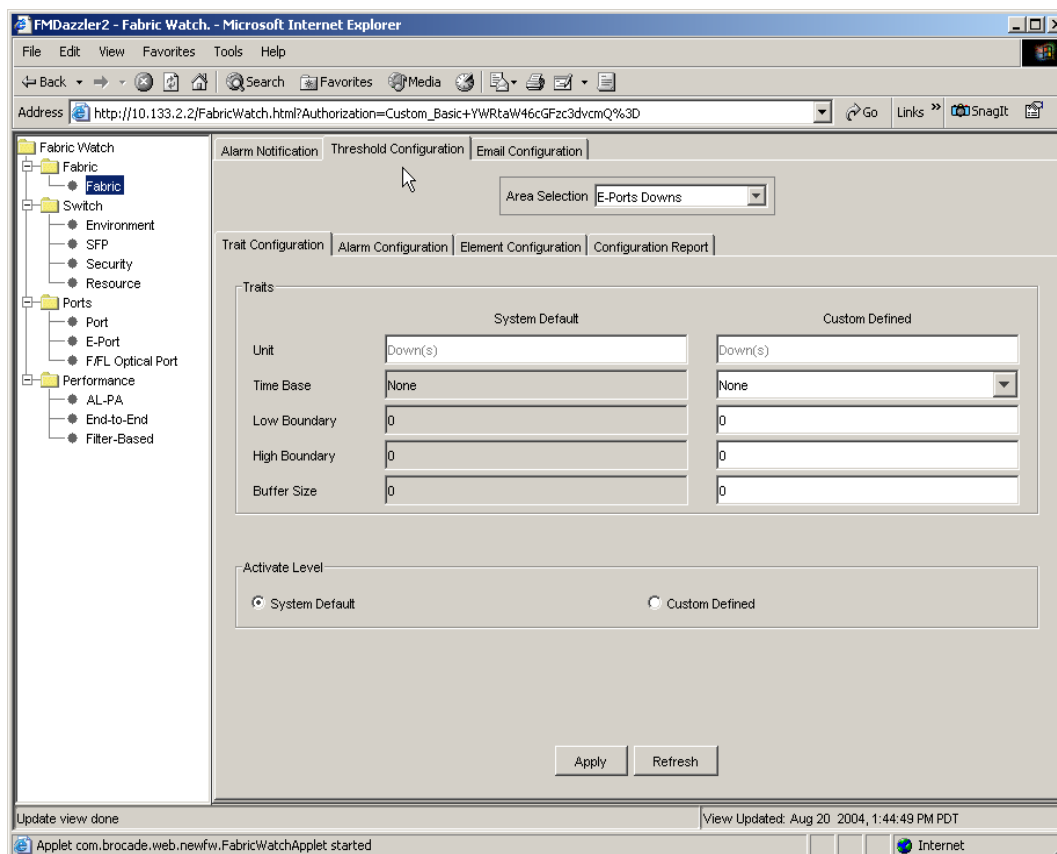


Figure 119 Threshold configuration tab display within the Fabric Watch window

Table 44 Threshold configuration tab components

Component	Description
Select Area pulldown menu	Lists the areas of thresholds that you can configure. The areas that appear in the pulldown menu depend on the class that you select from the Fabric Watch navigation tree.
Trait configuration tab	Provides fields to configure event conditions, such as threshold traits and alarms.
Alarm configuration tab	Provides fields for setting the type of notification method for each event type (changed, below, above, in-between).
Element configuration tab	Provides fields to configure Fabric Watch threshold traits.
Configuration report tab	Displays the Fabric Watch settings for the class that you select from the Fabric Watch navigation tree.

Trait configuration tab

Use the Trait Configuration subtab (see [Figure 120](#)) to view or set boundary conditions or thresholds for the areas that you select in the Threshold Configuration Tab. [Table 45](#) lists and describes the components of the Trait Configuration tab.

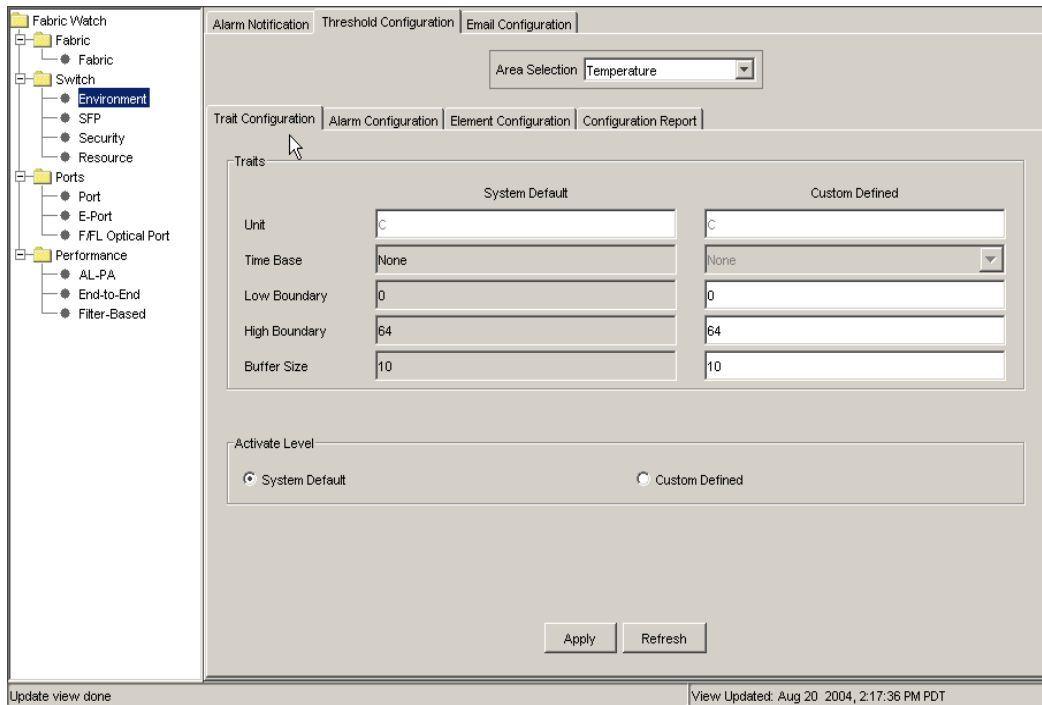


Figure 120 Trait configuration tab within the threshold configuration tab

Table 45 Trait configuration tab components

Component	Description
Traits	
Unit	The string used to define the units of measurement for the area.
Time base	The time base for the area.
Low boundary	The low threshold for the event setting comparisons.
High boundary	The high threshold for the event setting comparisons.
Buffer size	The size of the buffer zone used in event setting comparisons.
Activate level	
System default	Click this button to use the system default settings (you cannot change these settings).
Custom defined	Click this button to use your own settings.

Alarm configuration tab

Use the Alarm Configuration tab (see [Figure 121](#)) to set the type of notification method you want to use for each event type. [Table 46](#) lists and describes the components of the Alarm Configuration tab.

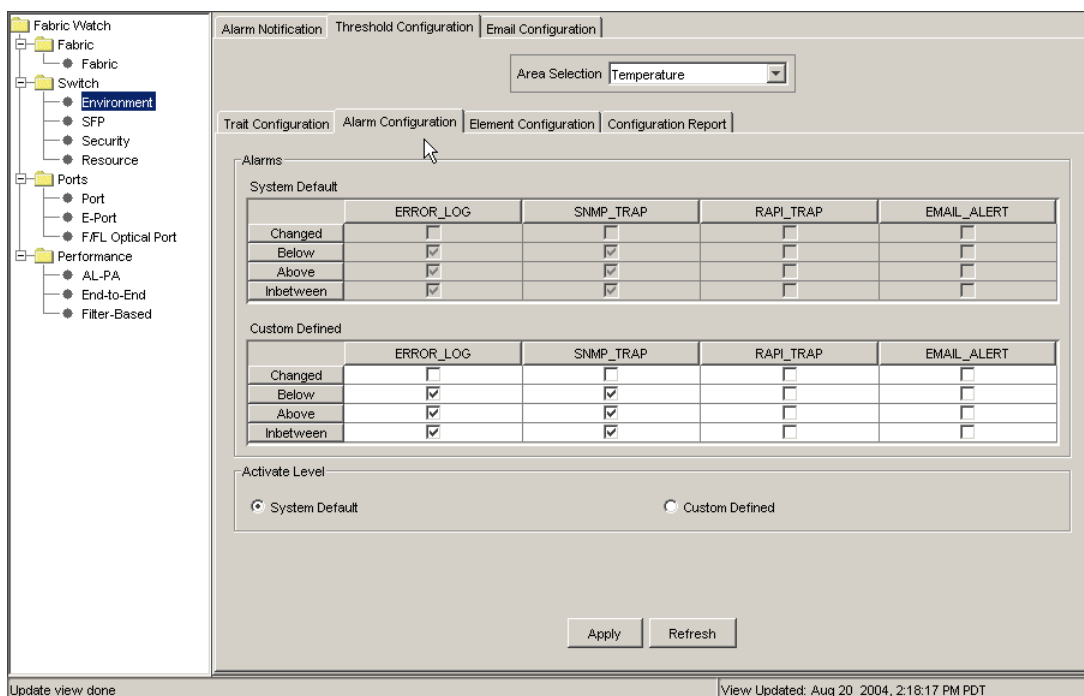


Figure 121 Alarm configuration tab within the threshold configuration tab

Table 46 Alarm configuration tab components

Alarm condition	Delivery method
Changed	Error log
Below	SNMP trap
Above	RAPI trap
Inbetween	Email alert
Activate level	Description
System default	Click this button to use the system default settings (you cannot change these settings).
Custom defined	Click this button to use your own settings.

Element configuration tab

Use the Element Configuration tab (see [Figure 122](#)) to view and configure threshold traits. [Table 47](#) lists and describes the components of the Element Configuration tab.

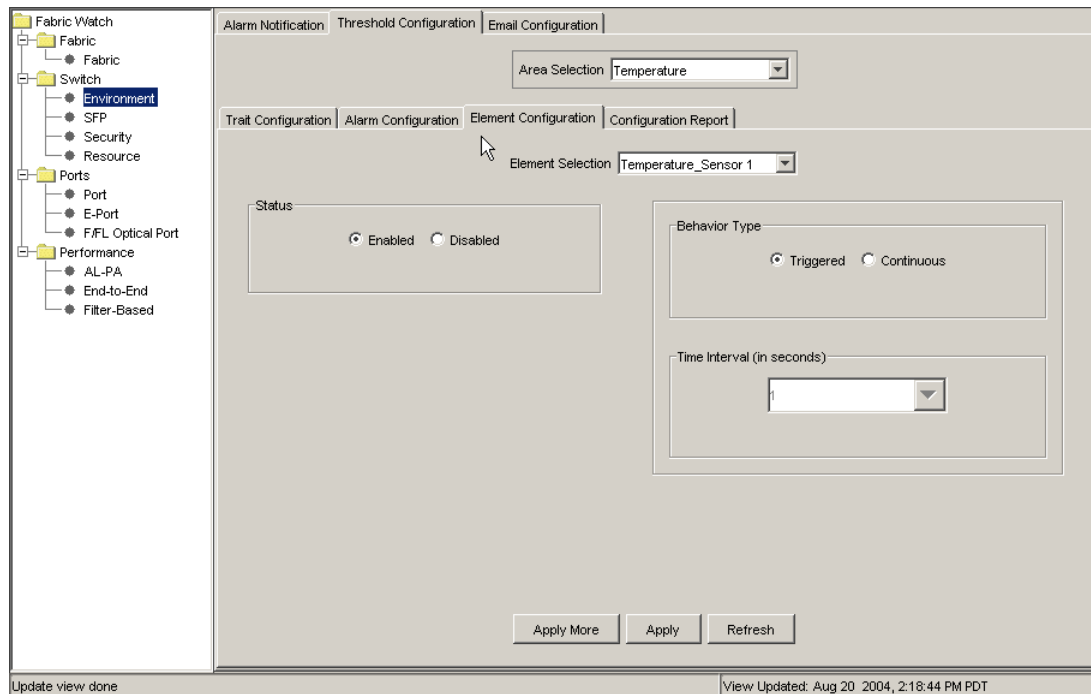


Figure 122 Element configuration tab within the threshold configuration tab

Table 47 Element configuration tab components

Component	Description
Select Element menu	Use the menu to chose a specific element to configure.
Status partition	
Enable radio button	Select the radio button to enable alarms.
Disable radio button	Select the radio button to disable alarms.
Behavior type partition	
Triggered radio button	Select the Triggered Behavior mode if you want Fabric Watch to register an event when a variable exceeds a threshold. An event is not be triggered again until the variable falls and exceeds the threshold again.
Continuous radio button	Select Continuous mode if you want Fabric Watch to register an event when a variable exceeds a threshold, and continue to register an event for every time interval.
Time interval partition	
Time Interval (in secs) menu	Select the amount of time (in seconds) that you want Fabric Watch to poll for a new event.

Configuration report tab

Use the Configuration Report tab (see [Figure 123](#)) to view the Fabric Watch settings for the class that you selected from the navigation tree. [Table 48](#) lists and describes the components of the Configuration Report tab.

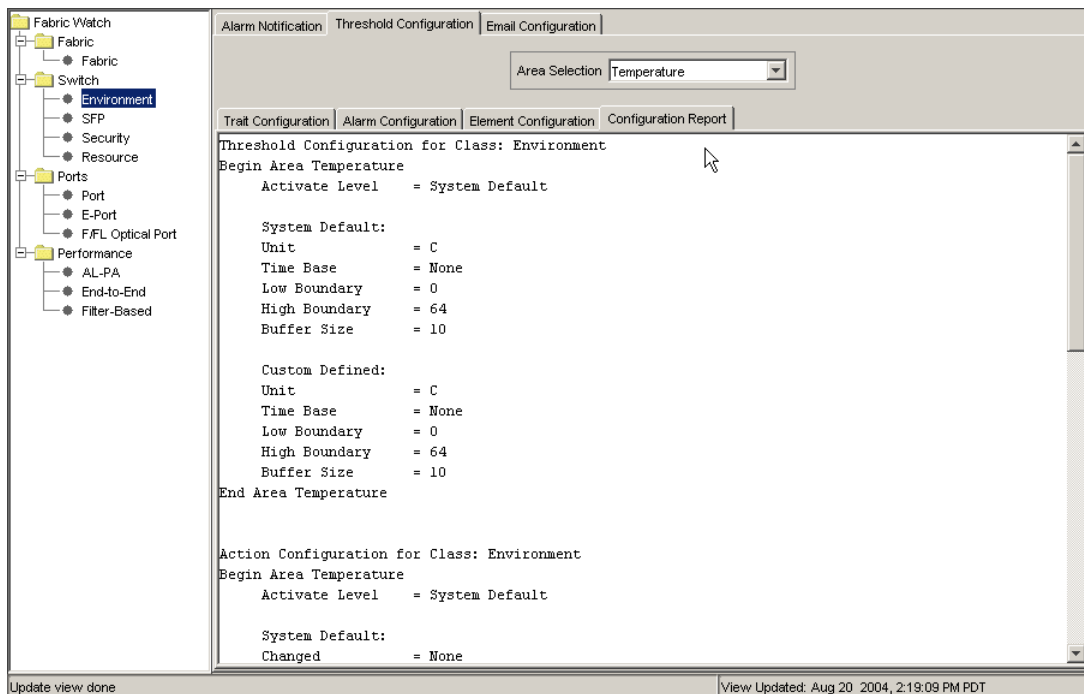


Figure 123 Configuration report tab

Table 48 Configuration report tab component descriptions

Component	Description
Configuration for Class	The class that is being reported. The item selected in the Navigation tree displays here.
Begin Area	The current settings configured for the selected area.
Begin Element	The current settings configured for the selected area.
Changed	Thresholds that have changed.
Exceeded	Thresholds that have been exceeded.
Below	Thresholds that have fallen below the configured level.
Above	Thresholds that have risen above the configured levels.
In between	Thresholds that have are in within the configured level.

Email configuration tab

Use the Email Configuration tab (see [Figure 124](#)) to enable and configure e-mail alarm notifications. A different e-mail configuration can be set for each Fabric Watch class. For example, one e-mail notification can be set for SFPs and another can be set for E-Ports (see the navigation tree). The Fabric Watch Email Configuration components are described in [Table 49](#).

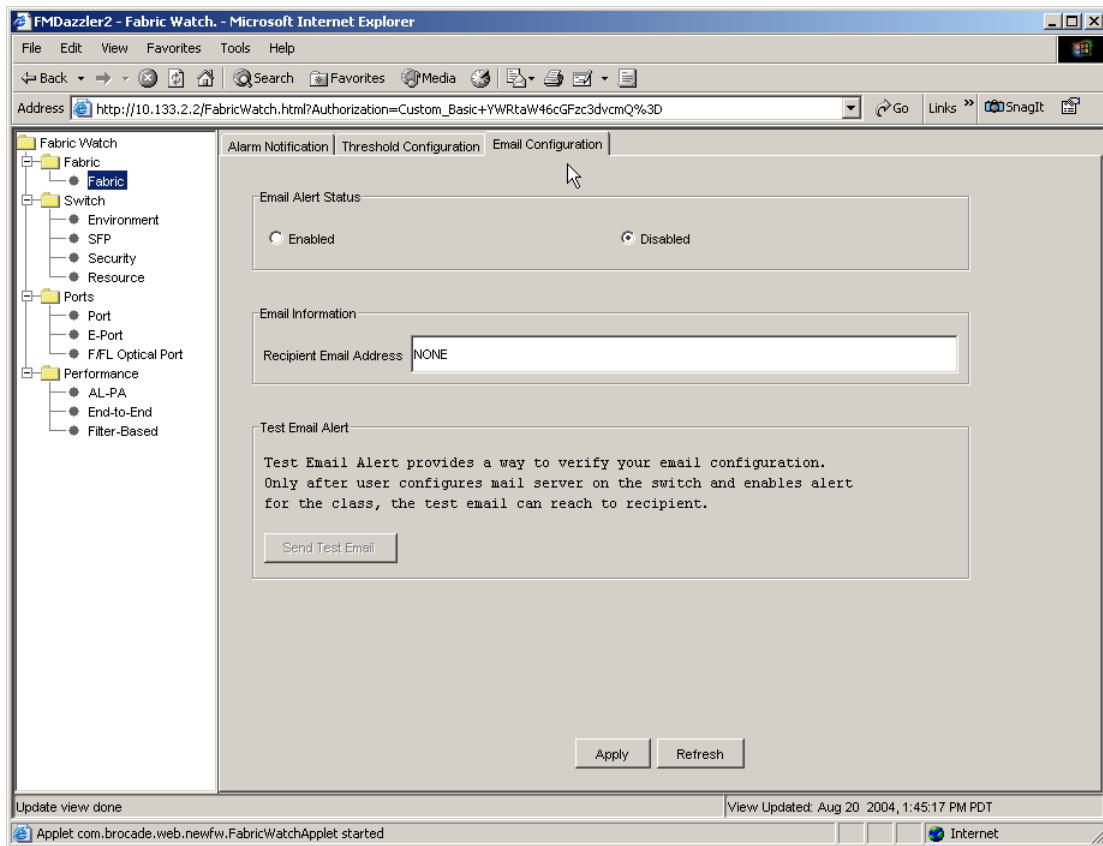


Figure 124 Email configuration tab

Table 49 Email configuration component descriptions

Component	Description
Email alert status	Use the enable or disable button to activate or deactivate.
Email information	Enter -email address to receive alarm notification.
Test Email alert	Provides option to send a test e-mail to the recipient in the Email information partition when you click Send Test Email.
Apply button	Applies your configuration.
Reset button	Resets the fields to default values.

Launching the Fabric Watch module

To access Fabric Watch:

1. Verify that the switch that you want to configure includes a Fabric Watch license. For more information, see [Chapter 4, "License key administration"](#).
2. Click on the switch you want to configure from the SAN Elements tab.
3. Select **Actions > Fabric Watch**.

Web Tools is launched and you are prompted to log in to the Fabric Watch module. After you successfully log in, the Web Tools Fabric Watch module opens (see [Figure 118](#) on page 178).

Configuring Fabric Watch thresholds

The Threshold Configuration tab enables you to configure event conditions. From this tab, you configure threshold traits, alarms, and email configuration.

Use the following procedures to configure threshold traits for all classes except for the FRU class. Use the procedure described in “[Configuring alarms for FRUs](#)” on page 188 for the FRU class.

Configuring threshold traits

Configure threshold traits to define a threshold for a particular class and area.

To configure threshold traits:

1. Launch the Fabric Watch module as described in “[Launching the Fabric Watch module](#)” on page 185.
2. Select the **Threshold Configuration** tab (see [Figure 119](#) on page 180).
3. Select the **Trait Configuration** subtab (see [Figure 120](#) on page 181).
4. Select a class from the Fabric Watch navigation tree.



NOTE: If you select the FRU class from the Fabric Watch navigation tree, there is a separate set of instructions. See “[Configuring alarms for FRUs](#)” on page 188.

5. Select an area from the Area Selection menu in the Threshold Configuration tab.
The module displays two columns of trait information, labeled *System Default* and *Custom Defined*. You cannot modify the information in the System Default column.
6. Either select the **System Default** radio button to use the system default settings and skip to [step 12](#) or select the **Custom Defined** radio button to specify new settings and proceed to the next step.
7. Enter a unit string of threshold in the Unit field.
8. Select a time to record the event in the Time Base field.
9. Enter the lowest boundary of the normal zone in the Low Boundary field.
10. Enter the highest boundary of the normal zone in the High Boundary field.
11. Enter the size of the buffer zone in the Buffer Size field.
12. Click **Apply** to save your changes.

Configuring threshold alarms

After you update the threshold information, use the Alarm Configuration subtab (see [Figure 121](#) on page 182) to customize the notification settings for each event setting.

To configure threshold alarms:

1. Launch the Fabric Watch module as described in “[Launching the Fabric Watch module](#)” on page 185.
2. Select the **Threshold Configuration** tab (see [Figure 119](#) on page 180).
3. Select the **Alarm Configuration** subtab ([Figure 121](#) on page 182).
4. Select a class from the Fabric Watch tree.
5. Select an area from the Area Selection menu in the Threshold Configuration tab.

The module displays two tables of alarm configuration information, labeled System Default and Custom Defined. You cannot modify the information in the System Default table.

6. Either select the **System Default** radio button in the Activate Level section to use the system default settings and skip to [step 8](#) or select the **Custom Defined** radio button in the Activate Level section to specify new settings and proceed to the next step.
7. Click a check box to set the type of notification method for each event type (Changed, Below, Above, or Inbetween). The available alarm actions are ERROR_LOG, SNMP_TRAP, RAPI_TRAP, and EMAIL_ALERT.
8. Click **Apply**.

Enabling or disabling threshold alarms for individual elements

Use the Element Configuration subtab (see [Figure 122](#) on page 183) to configure element-specific alarm settings.

To enable or disable threshold alarms for an element:

1. Launch the Fabric Watch module as described in "[Launching the Fabric Watch module](#)" on page 185.
2. Click a class from the Fabric Watch navigation tree.

You can set alarms for information on a switch only if that information is monitored by Fabric Watch for that switch; not all alarm options are available for all switches. For more information, refer to the *HP StorageWorks Fabric OS 4.x Fabric Watch user guide*.
3. Click the **Threshold Configuration** tab (see [Figure 119](#) on page 180).
4. Click the area with the alarms that you want to enable or disable from the Area Selection menu.
5. Click the **Element Configuration** subtab (see [Figure 122](#) on page 183).
6. Click an element from the Element Selection menu.
7. To disable threshold alarms, click **Disabled** in the Status area and click **Apply**. The threshold alarms are disabled and you do not need to continue with this procedure.

To enable threshold alarms, click **Enabled** in the Status area, and continue with the next step.

8. Select a behavior type for the threshold alarms:
 - Click **Triggered** to receive threshold alarms only when they are triggered by events that you have defined.
 - Click **Continuous** to receive threshold alarms at a continuous interval. Select a time interval (in which to receive the threshold alarms) from the Time Interval menu.
9. Click **Apply**.
10. Optional: Apply the selections on this panel to multiple elements simultaneously:
 - a. Click **Apply More**.

The Multiple Selection dialog box opens.
 - b. Select the boxes next to the indices of all applicable elements.
 - c. Click **OK**.

Configuring alarms for FRUs

Configuration for the FRU class is different from configuration for the other classes. Since FRUs are not monitored through a threshold-based system, they have a simpler interface for configuration. For FRUs, you configure the states for which an event occurs, as described in the following procedure.



NOTE: Some switches are considered single FRU units. The Fabric Watch module does not display FRU class information for those switch types. For more information, refer to the hardware documentation of the switch.

To configure alarms for FRUs:

1. Launch the Fabric Watch module as described in ["Launching the Fabric Watch module"](#) on page 185.
2. Select the **Threshold Configuration** tab (see [Figure 119](#) on page 180).
3. Select the FRU class from the Fabric Watch navigation tree.
4. Select a FRU type from the Area Selection menu in the Threshold Configuration tab.
5. Select the alarm states for which you want an event to register. Whenever a FRU of the selected type is detected to be in one of the selected states, an event occurs.
6. Select the methods by which you want to be notified about the FRU alarms. For FRUs, the only options are error log and email alert.
7. Click **Apply** to apply the changes to the switch.
A confirmation dialog box opens, asking whether you want to apply the changes to the switch.
8. Click **OK** in the confirmation dialog box to save the changes to the switch.

Displaying Fabric Watch alarm information

From the Fabric Watch module, you can view two types of reports:

- Alarm configuration, which displays threshold and alarm configurations for a selected class and area.
- Alarm notification, which displays the alarms that have occurred for a selected class and area.

Displaying an alarm configuration report

Use the Threshold Configuration tab, Configuration Report subtab (see [Figure 123](#) on page 184) to display a report of the configuration for a selected class and area. The following information is displayed:

- Threshold settings (labeled *Threshold Configuration*)
- Notification settings (labeled *Action Configuration*)
- Element settings (not labeled)

You can scroll through this information but cannot make changes.

To view an alarm configuration report:

1. Launch the Fabric Watch module as described in "[Launching the Fabric Watch module](#)" on page 185.
2. Select the **Threshold Configuration** tab (see [Figure 119](#) on page 180).
3. Select a previously configured element from the Fabric Watch navigation tree (see "[Enabling or disabling threshold alarms for individual elements](#)" on page 187).
4. Click the alarm area report to be viewed from the Area Selection menu.
5. Select the **Configuration Report** subtab (see [Figure 123](#) on page 184).

This tab displays a report of the configuration for the selected area.

Displaying alarms

Using the Alarm Notification tab, you can view a list of all alarms that have occurred for a selected class and area (see [Figure 118](#) on page 178). [Table 43](#) on page 179 describes the columns in this report. (For the FRU class, only the Name, State, and Time columns are displayed.)

To view alarms:

1. Launch the Fabric Watch module as described in "[Launching the Fabric Watch module](#)" on page 185.
2. Select the class that you want to check for alarms in the Fabric Watch navigation tree.
3. Select the **Alarm Notification** tab (see [Figure 121](#) on page 182).
4. Select the area that you want to check for alarms from the Area Selection menu.

All alarms for that area display.

For troubleshooting responses to alarms, refer to the *HP StorageWorks Fabric OS 4.x Fabric Watch user guide*.

Configuring e-mail notifications

One of the ways that you can be notified of an alarm condition is through an e-mail alert. If you have configured alarms to send an e-mail notification, you must also configure the e-mail server and the e-mail recipient, as described in the following sections.

Configuring the e-mail server on a switch

You must set up the e-mail notification recipient's DNS server and domain name on each switch for which e-mail notification is enabled.

When you set up the email notification local network's DNS server and domain name for the Core Switch 2/64 and the SAN Director 2/128, it is on a logical switch basis. This means that for each logical switch, switch 0 and switch 1, you must set up the e-mail notification recipient's DNS server and domain name individually.

To configure the e-mail server:

1. Launch the Switch Admin module.
2. Select the **Switch** tab.
3. Enter your primary domain name server IP address in the DNS Server 1 field in the Email Configuration area.
4. Enter your secondary domain server IP address in the DNS Server 2 field.

5. Enter the domain name in the Domain Name field (between 4 and 32 characters).
6. Click **Apply** to save the changes.

Configuring the e-mail alert recipient

A different e-mail alert configuration can be set for each class. For example, one email notification can be set for SFPs and another for E_Ports. Before configuring e-mail alert recipients, you must set up the e-mail notification recipient's DNS server and domain name. For more information, see "[Configuring the e-mail server on a switch](#)" on page 189.

To configure the Email Alert alarm:

1. Launch the Fabric Watch module as described in "[Launching the Fabric Watch module](#)" on page 185.
2. Select the **Email Configuration** tab (see [Figure 124](#) on page 185).
3. Click **Enable** or **Disable** to enable or disable the e-mail alert status.

When you disable e-mail alerts, Fabric Watch does not send e-mail notification, even if the e-mail notification method is assigned to monitored areas.

4. Enter the e-mail address of the recipient in the **Recipient Email Address** text box. Messages are sent to this address when email notification is enabled.



NOTE: E-mail addresses may not exceed 128 characters.

5. Click **Apply**.

Optional: Click **Send Test Email** to receive a test e-mail to verify that e-mail notification is working correctly. You can send a test e-mail only after you have applied your settings.

10 Baseline configuration management

This chapter provides information about establishing baseline configurations of switch configuration files and using them to validate and ensure consistent switch settings in your fabric, propagate configuration settings to additional switches in the fabric, and troubleshoot the switches.

The two sources that Fabric Manager uses as baselines are described in [Table 50](#).

Table 50 Baseline sources

Source	Description
Switch	Compare multiple switches to one switch that you identify as a baseline.
File	<ul style="list-style-type: none">• Save the configuration file of a switch as a file on an FTP server• Compare switches to the baseline configuration file• Propagate the baseline configuration file to switches.



NOTE: See [Chapter 11](#), “[Change management administration](#)” for information about automatic configuration file backups.

You can use the Save Baseline tool within Fabric Manager to:

- Create a limitless number of baselines.
- Recover fabric and switch settings.
- Propagate a baseline configuration to each new switch that you add to a fabric to ensure that the switch is compatible with the fabric.
- Propagate the baseline of one fabric throughout a second fabric before you merge the fabrics.
- Propagate a baseline configuration throughout a fabric to ensure consistent Fabric Watch and SNMP settings.
- Create and store multiple baselines that serve different purposes so you can quickly adapt your fabric as its function changes.

Consult the following sections for information on using baseline configurations and templates:

- [Saving a baseline configuration to a file](#), page 192
- [Comparing switches to a baseline file](#), page 194
- [Comparing switches to a baseline switch](#), page 195
- [Downloading a configuration](#), page 196
- [Customizing baseline configurations](#), page 203

Saving a baseline configuration to a file

This section describes how to save a baseline configuration from a single switch in a fabric. You can export the following categories of information from the configuration file to the baseline:

- Settings that you can normally assign with the configure command
- Settings for Fabric Watch and SNMP

When you create your baseline in Fabric Manager, you can choose the settings you want to add or omit from the baseline. For example, you can save Fabric Watch configuration settings to a baseline, then propagate those settings to an entire fabric and not alter the switch name of any switch in the fabric.

To save a baseline configuration to a file:

1. Ensure that file transfer properties between the switches and your host are configured. See ["Configuring file transfer options"](#) on page 141 for additional information.
2. Log in to the switch that has the configuration that you want to save as your baseline. Refer to ["Logging in to multiple switches simultaneously"](#) on page 130 for additional information.
3. From the Tools menu, select **Configuration > Save Baseline**

The Save Baseline -- Configuration Template Selection dialog box opens (see [Figure 125](#)).

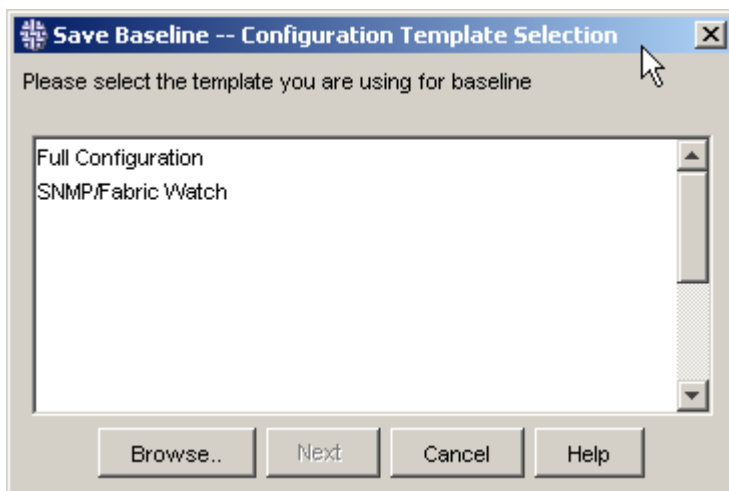


Figure 125 Save Baseline – Configuration Template Selection dialog box

4. Select **Full Configuration**, then click **Next**.

The Save Baseline -- Switch Selection window opens (see [Figure 126](#)).

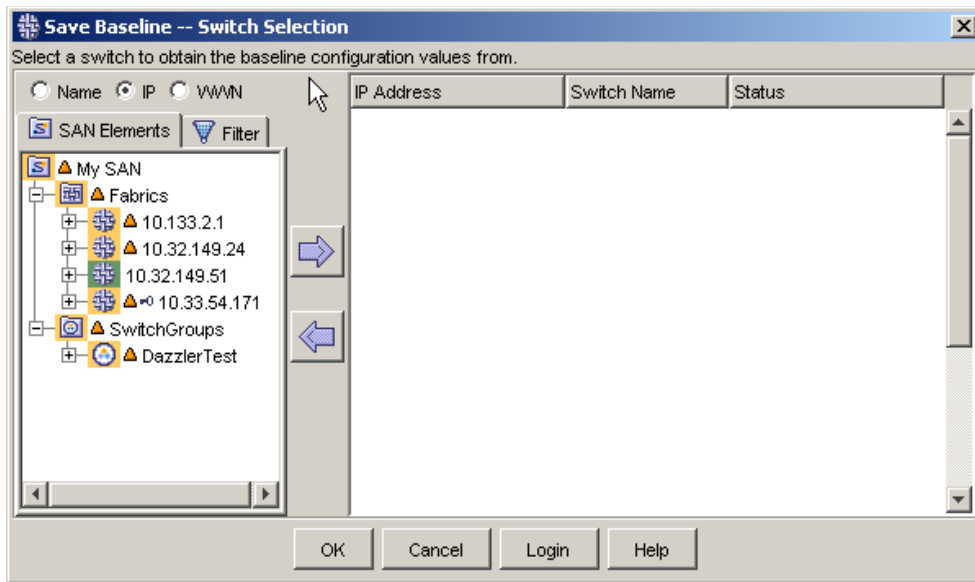


Figure 126 Save Baseline – Switch Selection window

5. From the SAN Elements tab, choose the switch that has the configuration you want to save, then click the right-arrow to add it to the right-hand window.
6. Click OK.

The Save Baseline – Parameter Selection window opens (see [Figure 127](#)).

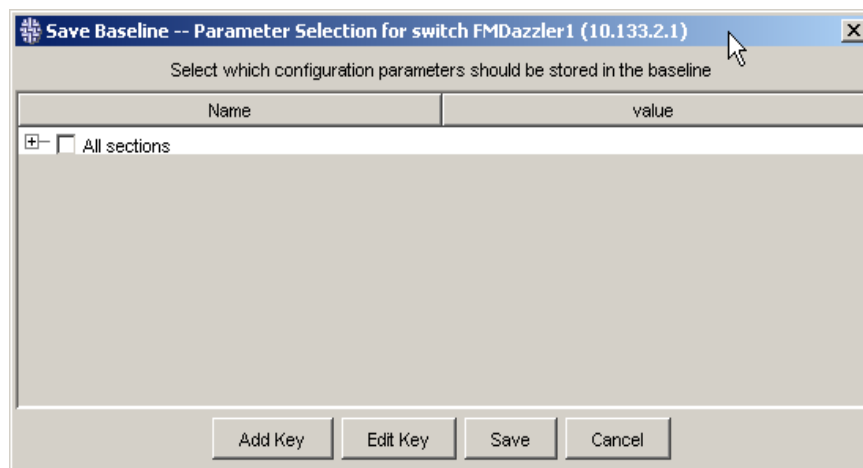


Figure 127 Save Baseline – Parameter Selection window

7. Select the check boxes for each setting or group of settings of the configuration file that you want to save to the baseline. Expand and collapse the navigation tree to access your options.



NOTE: The Solaris environment does not display check boxes clearly. If the check box displays full, the value is selected. If the check box displays shallow, it is not selected.

8. Click **Save**.

The Save base file dialog box opens.

9. Provide a name for your baseline, choose a folder to keep it in, and then click **Save**.

Comparing switches to a baseline file

When you compare the configuration of a switch to a baseline file, Fabric Manager identifies and lists each parameter that does not match. You should compare the configuration of one or more switches to a baseline if you plan to merge two fabrics, add a new switch to a fabric, verify that Fabric Watch and SNMP settings are consistent across a fabric, or if a fabric segments and you want to troubleshoot the problem.

To compare switches to a baseline file:

1. From the Tools menu, select **Configuration > Compare/Download from File**.

The Compare/Download from File – Select Baseline Configuration dialog box opens (see Figure 128).

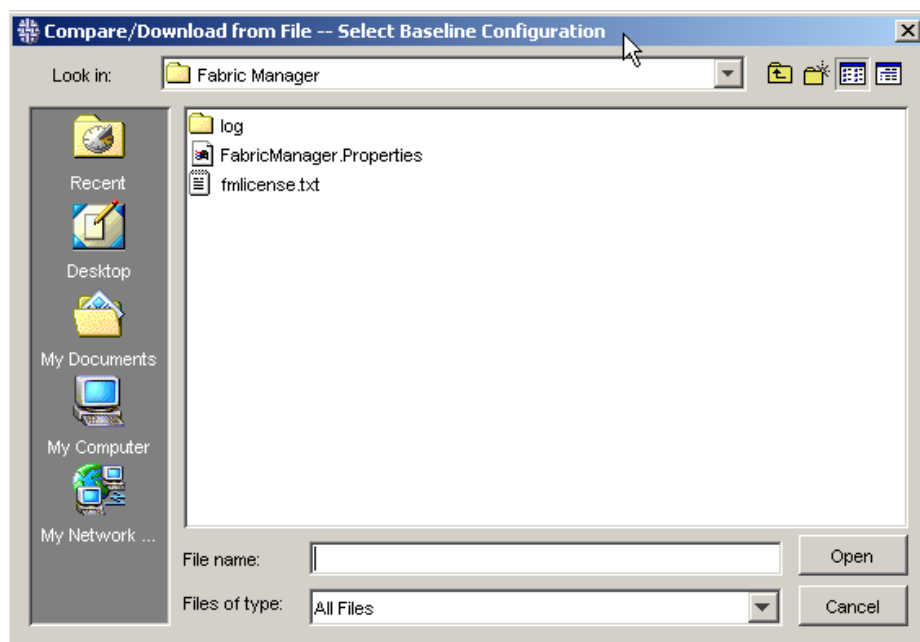


Figure 128 Compare/Download from File dialog box

2. Navigate to the baseline file and click **Open**.

The Compare/Download from File – Target Switch Selection window opens.



NOTE: In a Solaris environment, ensure that you select a directory, not the actual file, to compare the configuration against.

3. From the SAN Elements tab, select the switches that you want to compare to the baseline file and move them to the right-hand window using one of the following methods:
 - Select the switch, then click the right-arrow.
 - Click and drag a switch from the SAN Elements tab into the right-hand window.
 - Press and hold **Ctrl**, click multiple switches in the SAN Elements tab, and then click the right-arrow.
 - Press and hold **Ctrl**, click multiple switches, and click and drag the switches from the SAN Elements tab to the right-hand window.
 - Click and drag a fabric to the right-hand window to add all of the switches in that fabric.

4. Click **OK**.

The Compare/Download from File – Switch Configuration comparison and Download window displays and compares the configurations of the switches to the baseline.

5. Click **Apply Baseline** to apply this baseline to the switches that you selected.

Comparing switches to a baseline switch

To compare switches to a baseline switch:

1. From the Tools menu, select **Configuration > Compare/Download from Switch**.

The Compare/Download from Switch – Source Configuration Selection window opens (see [Figure 129](#)).

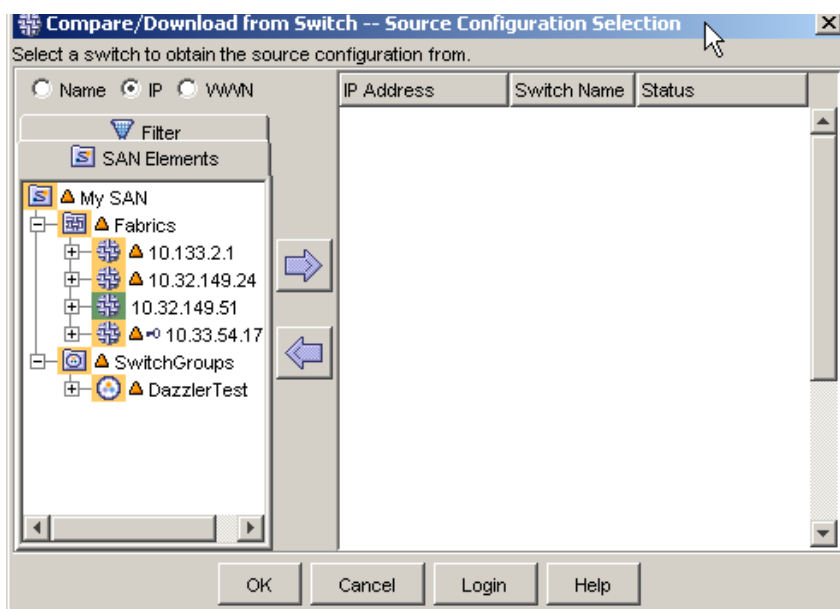


Figure 129 Compare/Download from Switch – Source Configuration Selection window

2. Navigate to the switch that you want to use as a baseline and click the right-arrow to move that switch to the right-hand window.
3. Click **OK**.

The Compare/Download from Switch – Target Switch Selection window opens.

4. From the SAN Elements tab, select the switches that you want to compare and move them to the right-hand window using one of the following methods:
 - Select the switch and then click the right-arrow.
 - Click and drag a switch from the SAN Elements tab into the right-hand window.
 - Press and hold **Ctrl**, click multiple switches in the SAN Elements tab, and then click the right-arrow.
 - Press and hold **Ctrl**, click multiple switches, and click and drag the switches from the SAN Elements tab to the right-hand window.
 - Click and drag a fabric to the right-hand window to add all of the switches in that fabric.

5. Click **OK**.
6. The Compare/Download from Switch – Switch Configuration comparison and Download window displays and compares the configurations of the switches to the baseline.
To apply this baseline to the switches that you selected, click **Apply Baseline**.

Downloading a configuration

You can download a configuration to a switch from a baseline file (see “[Downloading to switches from a baseline file](#)” next) or from another switch (see “[Downloading to switches from a baseline switch](#)” on page 202). During the download process, you can choose the settings that you want to download and the settings that you want to omit. See “[Saving a baseline configuration to a file](#)” on page 192 for instructions on saving a baseline configuration file.

[Table 51](#) lists the parameters that can be downloaded without rebooting the switch and the parameters that cannot be downloaded with Fabric Manager for the supported versions of Fabric OS.

Table 51 Non-reboot and non-downloadable parameters

Fabric OS	Non-reboot parameters	Non-downloadable parameters
v2.6.2	thresh trackChanges.status trackChanges.snmp-trap	pki sec A_Fcs D_Fcs cfg zone alias zoning snmp.agtParty login.passwd D_Options.OPTIONS_POLICY A_Options.OPTIONS_POLICY D_Rsnmp.RSNMP_POLICY A_Rsnmp.RSNMP_POLICY D_Wsnmp.WSNMP_POLICY A_Wsnmp.WSNMP_POLICY D_Telnet.TELNET_POLICY A_Telnet.TELNET_POLICY D_Http.HTTP_POLICY A_Http.HTTP_POLICY D_Api.API_POLICY A_Api.API_POLICY D_Ses.SES_POLICY A_Ses.SES_POLICY D_Ms.MS_POLICY A_Ms.MS_POLICY D_Serial.SERIAL_POLICY A_Serial.SERIAL_POLICY D_Frontpanel.FRONT_PANEL_POLICY A_Frontpanel.FRONT_PANEL_POLICY D_Scc.SCC_POLICY A_Scc.SCC_POLICY D_Dcc.DCC_POLICY A_Dcc.DCC_POLICY

Table 51 Non-reboot and non-downloadable parameters (continued)

Fabric OS	Non-reboot parameters	Non-downloadable parameters
v3.1.0	thresh switch.status.policy trackChanges.status trackChanges.snmp-trap fabric.principalSwSelMode portCfgName	pki sec A_Fcs D_Fcs zone alias zoning snmp.agtParty login.passwd D_Options.OPTIONS_POLICY A_Options.OPTIONS_POLICY D_Rsnmp.RSNMP_POLICY A_Rsnmp.RSNMP_POLICY D_Wsnmp.WSNMP_POLICY A_Wsnmp.WSNMP_POLICY D_Telnet.TELNET_POLICY A_Telnet.TELNET_POLICY D_Http.HTTP_POLICY A_Http.HTTP_POLICY D_Api.API_POLICY A_Api.API_POLICY D_Ses.SES_POLICY A_Ses.SES_POLICY D_Ms.MS_POLICY A_Ms.MS_POLICY D_Serial.SERIAL_POLICY A_Serial.SERIAL_POLICY D_Frontpanel.FRONT_PANEL_POLICY A_Frontpanel.FRONT_PANEL_POLICY D_Scc.SCC_POLICY A_Scc.SCC_POLICY D_Dcc.DCC_POLICY A_Dcc.DCC_POLICY fabric.ops.mode.pidFormat ts.clockServer

Table 51 Non-reboot and non-downloadable parameters (continued)

Fabric OS	Non-reboot parameters	Non-downloadable parameters
v3.2.0	thresh switch.status.policy trackChanges.status trackChanges.snmp-trap fabric.principalSwSelMode portCfgName diag.script.supportshow.config	pki sec A_Fcs D_Fcs zone alias zoning cfg snmp.agtParty login.passwd D_Options.OPTIONS_POLICY A_Options.OPTIONS_POLICY D_Rsnmp.RSNMP_POLICY A_Rsnmp.RSNMP_POLICY D_Wsnmp.WSNMP_POLICY A_Wsnmp.WSNMP_POLICY D_Telnet.TELNET_POLICY A_Telnet.TELNET_POLICY D_Http.HTTP_POLICY A_Http.HTTP_POLICY D_Api.API_POLICY A_Api.API_POLICY D_Ses.SES_POLICY A_Ses.SES_POLICY D_Ms.MS_POLICY A_Ms.MS_POLICY D_Serial.SERIAL_POLICY A_Serial.SERIAL_POLICY D_Frontpanel.FRONT_PANEL_POLICY A_Frontpanel.FRONT_PANEL_POLICY D_Scc.SCC_POLICY A_Scc.SCC_POLICY D_Dcc.DCC_POLICY A_Dcc.DCC_POLICY fabric.ops.mode.pidFormat ts.clockServer

Table 51 Non-reboot and non-downloadable parameters (continued)

Fabric OS	Non-reboot parameters	Non-downloadable parameters
v4.1.1	thresh switch.status.policy trackChanges.status trackChanges.snmp-trap fabric.principalSwSelMode portCfgName diag.script.supportshow.config rpc.rstatd rpc.rusersd telnetd fw	pki sec A_Fcs D_Fcs zone alias zoning cfg snmp.agtParty login.passwd D_Options.OPTIONS_POLICY A_Options.OPTIONS_POLICY D_Rsnmp.RSNMP_POLICY A_Rsnmp.RSNMP_POLICY D_Wsnmp.WSNMP_POLICY A_Wsnmp.WSNMP_POLICY D_Telnet.TELNET_POLICY A_Telnet.TELNET_POLICY D_Http.HTTP_POLICY A_Http.HTTP_POLICY D_Api.API_POLICY A_Api.API_POLICY D_Ses.SES_POLICY A_Ses.SES_POLICY D_Ms.MS_POLICY A_Ms.MS_POLICY D_Serial.SERIAL_POLICY A_Serial.SERIAL_POLICY D_Frontpanel.FRONT_PANEL_POLICY A_Frontpanel.FRONT_PANEL_POLICY D_Scc.SCC_POLICY A_Scc.SCC_POLICY D_Dcc.DCC_POLICY A_Dcc.DCC_POLICY fabric.ficonmode fabric.ops.mode.pidFormat ts.clockServer

Table 51 Non-reboot and non-downloadable parameters (continued)

Fabric OS	Non-reboot parameters	Non-downloadable parameters
v4.2.2	thresh switch.status.policy trackChanges.status trackChanges.snmp-trap fabric.principalSwSelMode portCfgName diag.script.supportshow.config rpc.rstatd rpc.rusersd telnetd fw	pki sec A_Fcs D_Fcs zone alias zoning cfg snmp.agtParty login.passwd D_Options.OPTIONS_POLICY A_Options.OPTIONS_POLICY D_Rsnmp.RSNMP_POLICY A_Rsnmp.RSNMP_POLICY D_Wsnmp.WSNMP_POLICY A_Wsnmp.WSNMP_POLICY D_Telnet.TELNET_POLICY A_Telnet.TELNET_POLICY D_Http.HTTP_POLICY A_Http.HTTP_POLICY D_Api.API_POLICY A_Api.API_POLICY D_Ses.SES_POLICY A_Ses.SES_POLICY D_Ms.MS_POLICY A_Ms.MS_POLICY D_Serial.SERIAL_POLICY A_Serial.SERIAL_POLICY D_Frontpanel.FRONT_PANEL_POLICY A_Frontpanel.FRONT_PANEL_POLICY D_Scc.SCC_POLICY A_Scc.SCC_POLICY D_Dcc.DCC_POLICY A_Dcc.DCC_POLICY fabric.ficonmode fabric.ops.mode.pidFormat ts.clockServer

Table 51 Non-reboot and non-downloadable parameters (continued)

Fabric OS	Non-reboot parameters	Non-downloadable parameters
v4.4.0	thresh switch.status.policy trackChanges.status trackChanges.snmp-trap fabric.principalSwSelMode portCfgName diag.script.supportshow.config rpc.rstatd rpc.rusersd telnetd fw	pki sec A_Fcs D_Fcs zone alias zoning cfg snmp.agtParty login.passwd D_Options.OPTIONS_POLICY A_Options.OPTIONS_POLICY D_Rsnmp.RSNMP_POLICY A_Rsnmp.RSNMP_POLICY D_Wsnmp.WSNMP_POLICY A_Wsnmp.WSNMP_POLICY D_Telnet.TELNET_POLICY A_Telnet.TELNET_POLICY D_Http.HTTP_POLICY A_Http.HTTP_POLICY D_Api.API_POLICY A_Api.API_POLICY D_Ses.SES_POLICY A_Ses.SES_POLICY D_Ms.MS_POLICY A_Ms.MS_POLICY D_Serial.SERIAL_POLICY A_Serial.SERIAL_POLICY D_Frontpanel.FRONT_PANEL_POLICY A_Frontpanel.FRONT_PANEL_POLICY D_Scc.SCC_POLICY A_Scc.SCC_POLICY D_Dcc.DCC_POLICY A_Dcc.DCC_POLICY fabric.ops.mode.pidFormat ts.clockServer

Downloading to switches from a baseline file

To download a baseline file to one or more switches:

1. From the Tools menu, select **Configuration > Compare/Download from File**.

The Compare/Download from File - Select Baseline Configuration dialog box opens (see [Figure 128](#) on page 194).

2. Navigate to the baseline file and click **Open**.

The Compare/Download from File - Target Switch Selection window opens.

3. From the SAN Elements tab, select the switches that you want to receive the baseline file and move them to the right window, using one of the following methods:
 - Select the switch; then click the right arrow.
 - Drag a switch from the SAN Elements tab into the right window.
 - Control-click multiple switches in the SAN Elements tab and then click the right arrow.
 - Control-click multiple switches and drag them from the SAN Elements tab to the right window.
 - Drag a fabric to the right window to add all of the switches in that fabric.
4. Click **OK**.

The Compare/Download from File – Switch Configuration comparison and Download window displays and compares the configurations of the switches to the baseline.

5. Click **Apply Baseline** to apply this baseline to the switches that you selected.



NOTE: The delay timer at the bottom of the Apply Baseline dialog box cannot be configured from here. It is propagated from current settings in the sequenced reboot group and represented by the combination of Fabric Stabilization timeout and Delay after Fabric Stabilization parameters.

A series of prompts is displayed to ensure that you are not downloading a configuration accidentally; the Apply Baseline window then displays.

The root navigation tree divides the switches into the following two groups:

- Non-Reboot Configuration Group, which contains any switches that do not need to reboot if a parameters user attempts a download.
 - Reboot Configuration Group, which contains any switches that need to reboot if a parameters user attempts a download.
6. Click **Apply**.

Fabric Manager issues an additional prompt to ensure that you want to proceed. The download proceeds one group at a time. The status of each switch is displayed in the right window.

Downloading to switches from a baseline switch

To download a configuration from a baseline switch to one or more switches:

1. From the Tools menu, select **Configuration > Compare/Download from Switch**.

The Compare/Download from Switch – Source Configuration Selection window opens (see [Figure 129](#) on page 195).

2. Navigate to the switch that you want to use as a baseline and click the right arrow to move that switch to the right window.
3. Click **OK**.

The Compare/Download from Switch – Target Switch Selection window opens.

4. From the SAN Elements tab, select the switches that you want to receive the baseline and move them to the right window using one of the following methods:
 - Select the switch and then click the right arrow.
 - Drag a switch from the SAN Elements tab into the right window.
 - Control-click multiple switches in the SAN Elements tab and then click the right arrow.
 - Control-click multiple switches, and drag the switches from the SAN Elements tab to the right window.
 - Drag a fabric to the right window to add all of the switches in that fabric.
 5. Click **OK**.
 6. The Compare/Download from Switch -- Switch Configuration comparison and Download window displays and compares the configurations of the switches to the baseline.
 7. To apply this baseline to the switches that you selected, click **Apply Baseline**.
-

Customizing baseline configurations

You must use a configuration template when you save a baseline configuration. Fabric Manager provides two templates: Full Configuration and SNMP/Fabric Watch (see [Figure 125](#) on page 192). You can create custom templates or edit one of the existing templates.

Access the configuration templates from the Tools menu by selecting **Configuration > Save Baseline**. Any customized baseline templates you create are also accessible from this location. Select one of the templates and then select a switch from the switch picker list. [Figure 130](#) is displayed.

The parameters that appear in the Save Baseline -- Parameter Selection dialog box (see [Figure 130](#)) are determined by the configuration template you have selected.

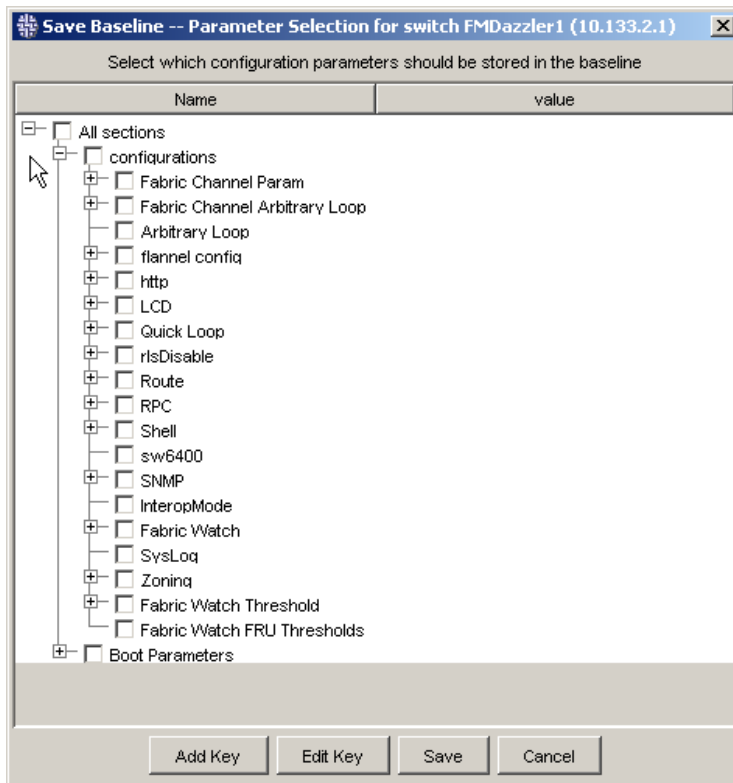


Figure 130 Save Baseline – Parameter Selection dialog box

To create a custom template, you must create an XML file and save it in the Fabric Manager > client > baseline > template directory on your Fabric Manager server. The Full Configuration and SNMP/Fabric Watch template files are also in the Fabric Manager > client > baseline > template directory.

To create a custom baseline template, you must define custom XML tags:

1. Open `fullBaseLineTemplate.xml` in a text editor.



NOTE: If you are running Fabric Manager in a Windows environment, the Notepad application does not work for this task. To edit the XML document, you must open the file in WordPad or a similar application that recognizes carriage returns.

2. Edit the Description tag in the .xml file by providing a template name for your new baseline configuration between the `summary` and `/summary` tags:

```

Description
  summaryMy Template/summary
  detailThis will show my custom parameters/detail
/Description
  
```


3. Add or remove section tags to include or remove sections from the configuration file to the template. Each section appears in the configuration file as text in [square brackets]. For example, to add the [Boot Parameters] section of the configuration file to the template, you can use the Boot Parameters value attribute in a section tag. The Boot Parameter text attribute identifies the check box in the Save Baseline -- Parameter Selection dialog box (see [Figure 131](#)). This section tag includes a prefix tag to add parameters to the section.

```
section value="Boot Parameters" text="boot parameters"  
  prefix ID="boot" text="Boot" /  
/section
```

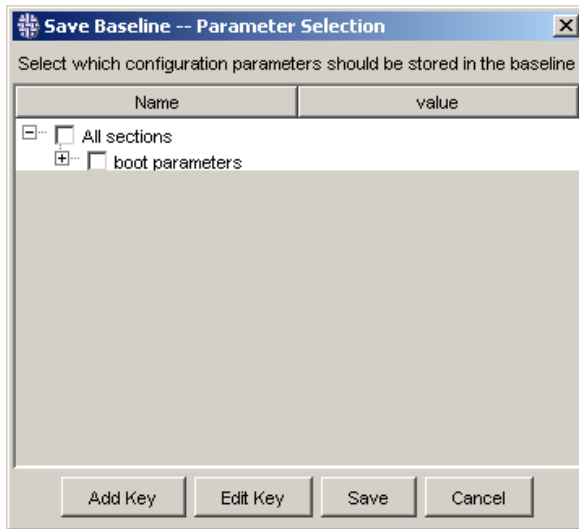


Figure 131 Parameter Selection dialog box

4. Add or remove prefix tags to section tags to include or remove parameters from the Save Baseline -- Parameter Selection dialog box. In each section, include only prefixes that appear in the analogous section in the configuration file.

The prefix tag adds parameters to the template. Every parameter in the configuration file includes a prefix before the first dot. Set the ID attribute of the prefix tag to add all the configuration file parameters that use that prefix to the template. For example, add all the parameters in the

configuration file that begin with *boot.* to the template. Set the text attribute to define the text that accompanies the parameter in the Save Baseline – Parameter Selection dialog box (see [Figure 132](#)).

```
prefix ID="boot" text="Boot" /
```

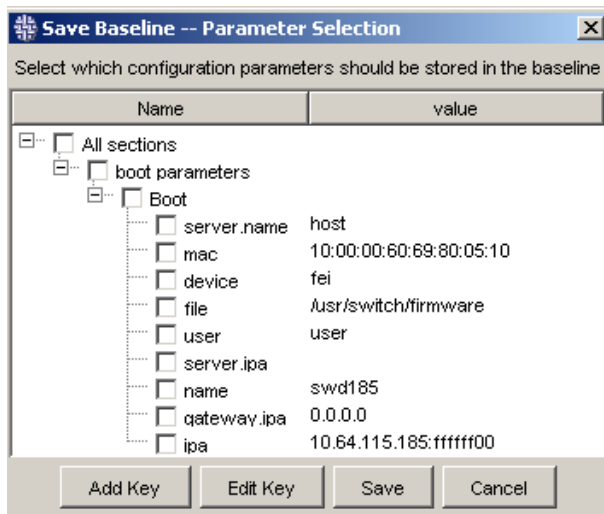


Figure 132 Adding prefixes dialog box

5. Save the file in the same directory (with a different filename) to create a new configuration template. If you save the file with these changes and do *not* change the filename, the existing configuration is updated.

11 Change management administration

The Change Management feature allows you to monitor changes in a fabric and generate Extensible Markup Language (XML) reports listing the changes.

To use the Change Management feature, you must set up profiles that specify which elements to monitor, when to monitor them, and what to do when changes occur to those elements. The notification configuration defines what to do when changes occur to the selected elements (send e-mail notifications and/or alerts).

You do not have to define schedules or notifications, but you must select at least one element to monitor. If you do not define a schedule, there is no automated checking. If you do not define notifications, there will be no alerts or e-mail notifications.

The Change Management profiles are saved on the server database. Once a profile is defined and saved, any user on the same server can view, edit, or delete it. You can apply a single profile to multiple fabrics, and one fabric can have multiple profiles for different monitoring purposes simultaneously.

To use the Change Management feature, follow these basic steps:

1. Configure notification parameters for all users on the server (see ["Configuring notification parameters"](#) on page 142).
2. Create a *Change Management* profile that specifies which elements to monitor for changes (see ["Creating a Change Management profile"](#) on page 209).
3. Optional: Compare subsequent snapshot reports to the baseline snapshot report to monitor changes to the elements over defined timeframes (see ["Comparing snapshots"](#) on page 218).
4. Optional: Create multiple profiles to monitor different sets of elements. Snapshots are associated with a single profile however, and a snapshot based on Profile X cannot be compared to a snapshot based on Profile Y.

Consult the following sections for information about setting up, creating, and working with Change Management profiles, and also working with the subsequent change reports using snapshots:

- [Working with Change Management profiles](#), page 207
- [Working with snapshots and change reports](#), page 216

Working with Change Management profiles

A Change Management profile is created so you can monitor changes to fabric elements and provide e-mail notification or alerts automatically when change occurs. [Table 52](#) lists the fabric elements you can monitor, and [Table 53](#) on page 209 describes known limitations working with the Change Management feature.

Consult the following sections for information on setting up, creating, and working with Change Management profiles:

- ["Creating a Change Management profile"](#) on page 209
- ["Deleting Change Management profiles"](#) on page 213
- ["Editing Change Management profiles"](#) on page 213
- ["Cloning Change Management profiles"](#) on page 214

Table 52 Change Management profile monitored elements

Monitored element	Description
Firmware	Any changes
ISL ²	
Name server	
Zoning ²	
Device links	The domain and port WWN to which the device is connected.
Licenses	Added and Removed
Port Status	<ul style="list-style-type: none"> Configured and Disabled Online and Offline Down status is not reported
Security ²	<ul style="list-style-type: none"> Enabled and Disabled Policy changes
Switches	<ul style="list-style-type: none"> Added and Removed Configuration changes^{1, 2}
¹ If a fabric includes an MP Router as a member switch (not the launch switch), switch configuration changes are not reported for the MP Router. Security policy change information for the entire fabric might not be collected if the MP Router is the first object Fabric Manager gets from API ² If a fabric includes an MP Router as a launch switch, information about these elements are not retrieved (not supported by MP Router).	

Table 53 Change Management limitations

Change	Description
Time Changes	If the current system time on the Fabric Manager server machine is changed to a time that is after the end time of a scheduled Change Management check, the change report will not run.
Adding Switches	If a switch is added to a fabric after a Change Management profile is created, the profile settings are not applied to the switch until you log in to it.
Segmented Fabrics	If a fabric segments into separate fabrics, the original fabric retains all of the change management profiles and continues to run the scheduled profiles and report any missing switches, devices, and the like. However, the new, smaller fabrics that are created for the segmented switches do not have any change management profiles or reports.
Merging Fabrics	If fabric B1 and fabric B2 both have Change Management profiles associated with them, and you merge the fabrics together, the Change Management profile for the fabric that was discovered first is applied to the merged fabric.
Logical Switch Groups	Change Management profiles cannot be applied to logical switch groups.

Creating a Change Management profile

You can create Change Management profiles after you have configured the notification parameters (see ["Configuring notification parameters"](#) on page 142).

To create a Change Management profile:

1. Select **Tools > ChangeMgmt > Manage Profiles**.

The Change Management Profiles dialog box opens (see [Figure 133](#)). Any existing profiles are displayed in the dialog box.

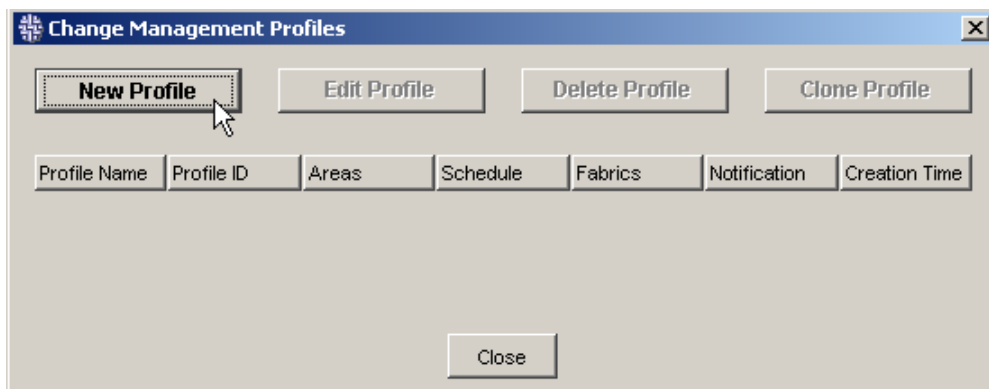


Figure 133 Change Management Profiles dialog box

2. Click **New Profile**.

The Change Management wizard displays.

3. Read the introduction and then click **Next**.
4. Enter a profile name and select the check boxes next to the parameters you want to monitor for changes (see [Figure 134](#)).

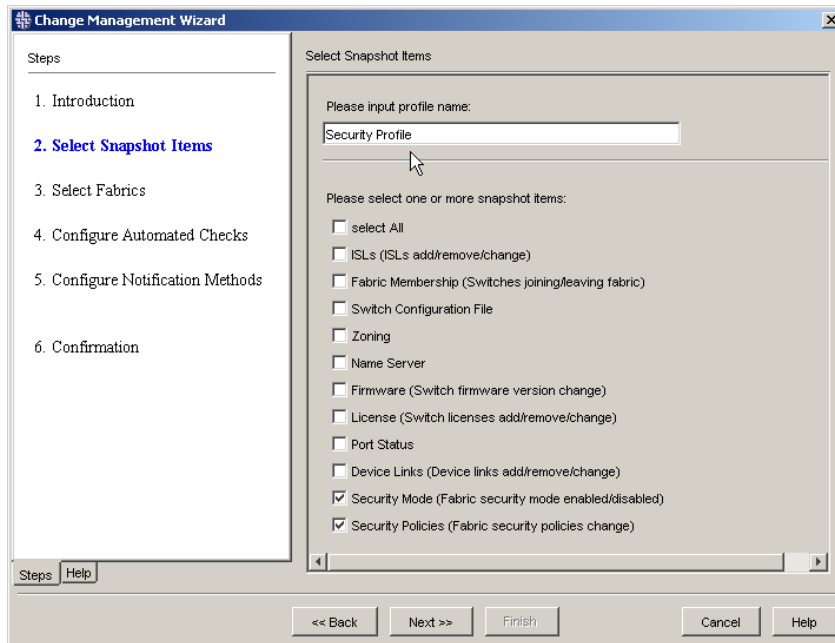


Figure 134 Select snapshot items

5. Click **Next**.

The Select Fabrics window displays (see [Figure 135](#)).

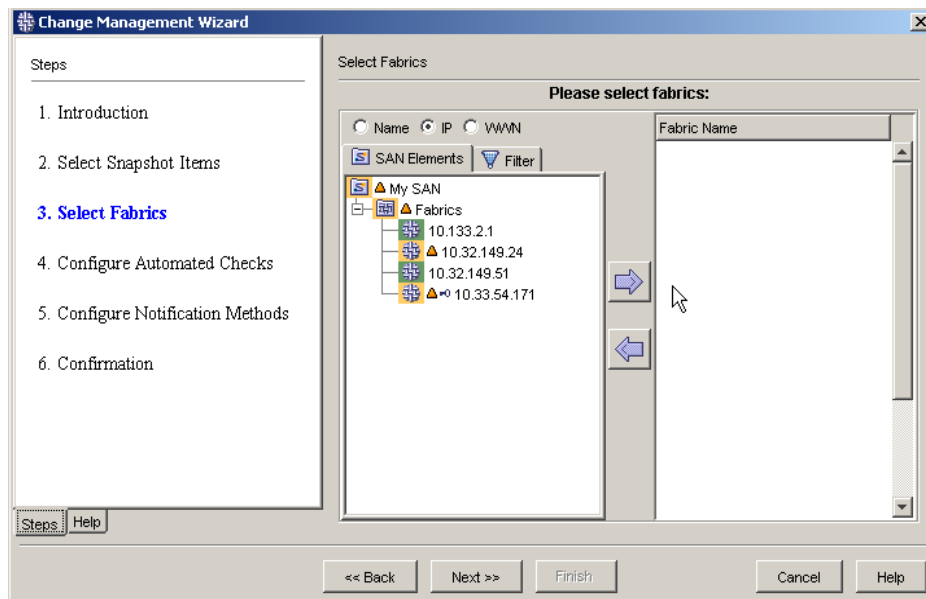


Figure 135 Select fabrics window

6. Select the fabrics from within the SAN Elements tab that want in the Change Management profile. Click the right-arrow to add them.

7. Click **Next**.

All switches in selected fabrics must be logged in. A switch login dialog box opens if the login information is not already set. Enter the switch login information if necessary.

8. After establishing a login to each switch in the selected fabric (if necessary), the Configure Automated Checks window opens (see [Figure 136](#)).

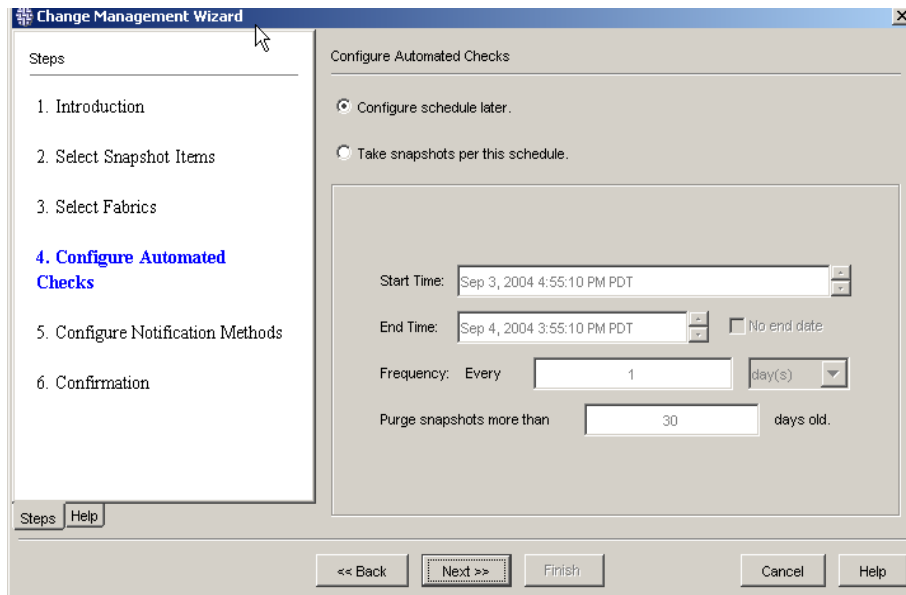


Figure 136 Configure Automated Checks window

If you do not want to set up an automated schedule to perform the checks, click **Configure schedule later** and then click **Next** (skip to [step 15](#)).

9. To schedule automated checks, click **Take Snapshots per this schedule**.
10. Select an element in the Start Time field (month, day, year, hour, minute, second, AM or PM) and use the scroll buttons to change the elements to the exact time you want Fabric Manager to begin checking the selected fabrics for any changes to your selected parameters.
11. Select an element in the End Time field (month, day, year, hour, minute, second, AM or PM) and use the scroll buttons to change the elements to the exact time you want Fabric Manager to stop checking the selected fabrics for any changes to your selected parameters. If you want the automated checks to continue indefinitely, select the **No end date** radio button.
12. Enter a number in the Frequency: Every field that corresponds to the number of hours, days, or weeks you specify from the adjacent menu. If you want to run the check only one time, select **once** from the adjacent menu.
13. Enter the number of days you want to keep the automated check snapshot in the Purge snapshots more than XX days old field. The minimum number of days is 1 and the maximum 2147483647.
14. Click **Next**.

The Configure Notification Methods window appears (see [Figure 137](#)).

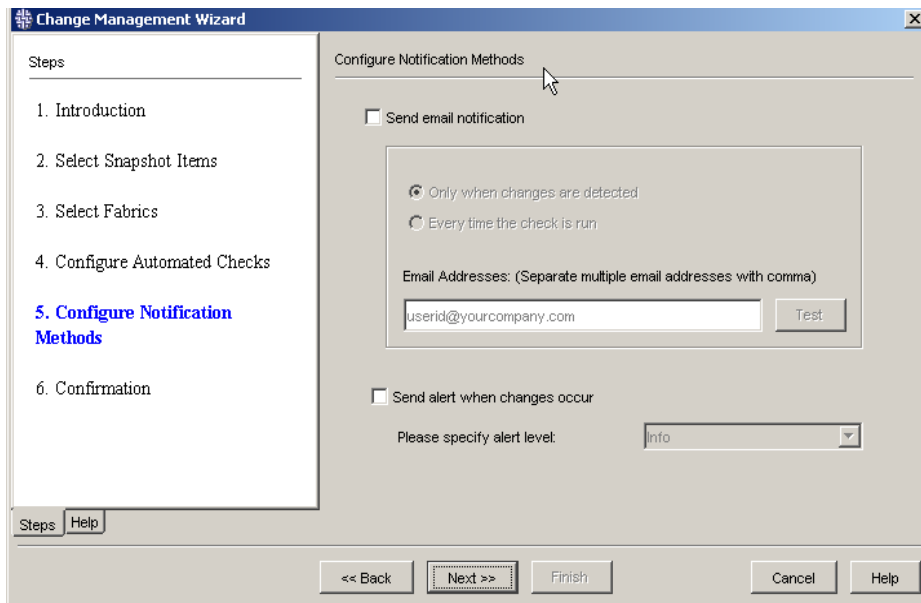


Figure 137 Configure Notification Methods window

If you do not want to receive e-mail notifications or alerts when a change occurs, click **Next** and [step 21](#).

- 15.** Optional: Click **Send email notification** to receive notification of change by e-mail.

If a change occurs in the parameters you specified, an e-mail is generated with an XML attachment detailing the exact changes to the parameters you specified in the Change Management profile (see [step 4](#)).

- 16.** Select when you want to receive an e-mail notification:

Only when changes are detected or every time the check is run

- 17.** Enter e-mail addresses. The minimum is one address. Separate multiple e-mails with a comma between each address.

- 18.** Optional: Click **Test** to send a test message to the e-mail addresses specified.

- 19.** Optional: Click **Send alert when changes occur** if you want alerts to be triggered for changes to this Change Management profile.

- 20.** Select an alert level for the Change Management alerts (**info**, **warning**, or **critical**).

- 21.** Click **Next**.

A confirmation page is displayed with the settings you have selected for the Change Management profile.

- 22.** Verify the settings and then click **Finish**.

Fabric Manager saves the Change Management profile information to the database. The first snapshot report created is saved as the baseline snapshot report. All subsequent snapshots are compared against the baseline snapshot, and the comparison report (change report) is displayed in the subsequent snapshots.

Each snapshot is also saved in the database. You can purge them at a specified time or delete them manually. If a fabric is removed from Fabric Manager, all associated profiles and snapshots are deleted.

After creating a Change Management profile, you can edit (see ["Editing Change Management profiles"](#) on page 213), clone (see ["Cloning Change Management profiles"](#) on page 214), or delete it (see ["Deleting Change Management profiles"](#) on page 213). You can also create additional profiles.

You can also view (see ["Displaying a change report"](#) on page 217), create (see ["Creating snapshots on demand"](#) on page 218), compare (see ["Comparing snapshots"](#) on page 218), export (see ["Exporting snapshot and change reports"](#) on page 219), print (see ["Printing snapshot and change reports"](#) on page 220), and change (see ["Changing baseline snapshot reports"](#) on page 220).



NOTE: The Fabric Manager server purges snapshots at 12:00 PM (noon) if the option to purge older snapshots is selected in a profile.

Deleting Change Management profiles

When you delete a Change Management profile, all associated snapshots and change reports are also deleted from the database.

To delete Change Management profiles:

1. Select **Tools > ChangeMgmt > Manage Profiles**.

The Change Management Profiles dialog box opens (see [Figure 133](#) on page 209). Any existing profiles are displayed in the dialog box.

2. Select one or more Change Management profiles from the table, and click **Delete Profile**.

A confirmation dialog box opens.

3. Click **OK** to delete the selected profiles, and all snapshots and change reports based on the selected profiles from the database.

Editing Change Management profiles

To edit a Change Management profile:

1. Select **Tools > ChangeMgmt > Manage Profiles**.

The Change Management Profiles dialog box opens (see [Figure 133](#) on page 209). Any existing profiles are displayed in the dialog box.

2. Select the profile you want to edit, and click **Edit Profile**.

The Change Management wizard opens.

3. Read the introduction and then click **Next**.

The Select Snapshot Items dialog box opens (see [Figure 134](#) on page 210).



NOTE: You cannot change the snapshot items that are being monitored. To monitor a different set of snapshot items, you must create a new profile.

4. The name of the Change Management profile you selected in [step 2](#) is in the Please input profile name dialog box. If you want to edit a different profile, you must exit the Change Management wizard and select it.

5. Click **Next**.

The Select Fabrics window opens (see [Figure 135](#) on page 210).

6. Optional: Rearrange the fabrics you want to monitor for changes. Select the fabric, then use the right-arrow to add fabrics; use the left-arrow to remove any fabrics.

7. Click **Next**.

The Configure Automated Checks window opens (see [Figure 136](#) on page 211).

If you do not want to edit the schedule, click **Configure schedule later** and then click **Next** and skip to [step 14](#).

8. To edit automated checks, select **Take Snapshots per this schedule**.

9. Select an element in the Start Time field (month, day, year, hour, minute, second, AM or PM) and use the scroll buttons to change the elements to the exact time you want Fabric Manager to begin checking the selected fabrics for any changes to your selected parameters.

10. Select an element in the End Time field (month, day, year, hour, minute, second, AM or PM) and use the scroll buttons to change the elements to the exact time you want Fabric Manager to stop checking the selected fabrics for any changes to your selected parameters. If you want the automated checks to continue indefinitely, select the **No end date** radio button.

11. Enter a number in the Frequency: Every field that corresponds to the number of hours, days, or weeks you specify from the adjacent pull-down menu. If you only want to run the check one time, select *once* from the adjacent menu.

12. Enter the number of days you want to keep the automated check snapshot in the Purge snapshots more than XX days old field. The minimum number of days is 1; the maximum 2147483647.

13. Click **Next**.

The Configure Notification Methods window opens (see [Figure 137](#) on page 212). If you do not want to receive email notifications or alerts when a change occurs, click **Next** and skip to [step 21](#).

14. Optional: Click **Send email notification** to receive notification of change by e-mail.

15. Select when you want to receive an email notification:

Only when changes are detected or every time the check is run

16. Edit or enter the e-mail addresses. The minimum is one address. Separate multiple e-mails with a comma between each address.

17. Optional: Click **Test** to send a test message to the e-mail addresses specified.

18. Optional: Click **Send alert when changes occur** if you want alerts to be triggered for changes to this Change Management profile.

19. Select an alert level for the Change Management alerts (**informational**, **warning**, **error**, or **critical**).

20. Click **Next**.

21. Read the confirmation and then click **Finish**.

Cloning Change Management profiles

You can clone (duplicate) an existing Change Management profile if you need another similar profile and do not want to repeat all of the steps required to create a new one. For example, if you have another fabric that you want to run the same (or similar) checks on, you can clone an existing profile with minor adjustments (as needed).

To clone a Change Management profile:

1. Select **Tools > ChangeMgmt > Manage Profiles**.

The Change Management Profiles dialog box opens (see [Figure 133](#) on page 209). Any existing profiles are displayed in the dialog box.

2. Select the profile you want to clone and click **Clone Profile**.
The Change Management wizard opens.
3. Read the introduction and then click **Next**.
The Select Snapshot Items dialog box opens (see [Figure 134](#) on page 210). The name of the Change Management profile you selected in [step 2](#) is in the Please input profile name dialog box.
4. Optional: Change the profile name and elements to monitor.
5. Click **Next**.
The Select Fabrics window appears (see [Figure 135](#) on page 210).
6. Optional: Select a new fabric for the new profile. Use the right-arrow to add fabrics; use the left-arrow to remove any fabrics.
7. Click **Next**.
8. **Optional:** Make changes to the schedule.
The Configure Automated Checks window opens (see [Figure 136](#) on page 211). If you do not want to change the schedule, click **Configure schedule later** and then click **Next** and skip to [step 15](#).
9. To change the existing automated checks, click **Take Snapshots per this schedule**.
10. Select an element in the Start Time field (month, day, year, hour, minute, second, AM or PM) and use the scroll buttons to change the elements to the exact time you want Fabric Manager to begin checking the selected fabrics for any changes to your selected parameters.
11. Select an element in the End Time field (month, day, year, hour, minute, second, AM or PM) and use the scroll buttons to change the elements to the exact time you want Fabric Manager to stop checking the selected fabrics for any changes to your selected parameters. If you want the automated checks to continue indefinitely, select the **No end date** radio button.
12. Enter a number in the Frequency: Every field that corresponds to the number of hours, days, or weeks you specify from the adjacent pull-down menu. If you want to run the check only once, select **once** from the adjacent menu.
13. Enter the number of days you want to keep the automated check snapshot in the Purge snapshots more than XX days old field. The minimum number of days is 1 and the maximum 2147483647.
14. Click **Next**.
The Configure Notification Methods window opens (see [Figure 137](#) on page 212). If you do not want to receive e-mail notifications or alerts when a change occurs, click **Next** and skip to [step 21](#).
15. Optional: Make changes to the notification settings. Click **Send email notification** to receive notification of change by e-mail.
16. Select when you want to receive an email notification:
Only when changes are detected or every time the check is run
17. Edit or enter the email addresses. The minimum is one address. Separate multiple e-mails with a comma between each address.
18. Optional: Click **Test** to send a test message to the e-mail addresses specified.
19. Optional: Click **Send alert when changes occur** if you want alerts to be triggered for changes to this Change Management profile.
20. Select an alert level for the Change Management alerts (**info**, **warning**, or **critical**).
21. Click **Next**.
A confirmation displays indicating the selected settings for the cloned Change Management profile.

22. Verify the settings and then click **Finish**.

Fabric Manager saves the cloned Change Management profile information to the database.

23. To view the cloned Change Management profile, select **Tools > ChangeMgmt > Manage Profiles**.

The Change Management Profiles dialog box opens (see [Figure 138](#)). Any existing profiles are displayed in the dialog box.

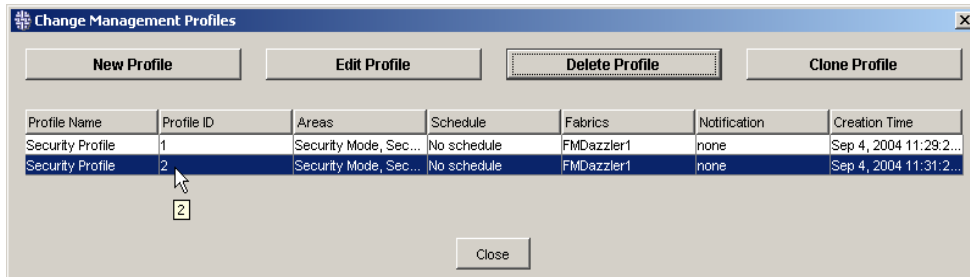


Figure 138 Change Management profiles cloned entry dialog box



NOTE: [Figure 138](#) displays a Change Management profile and its clone. Since the Profile Name, Areas (Parameters), Schedule, Fabrics, and Notification are identical, the only differences are the Profile IDs and the Creation Times.

Working with snapshots and change reports

After a Change Management profile is defined (see ["Creating a Change Management profile"](#) on page 209), a snapshot report of the information requested in the profile is created and saved automatically on the Fabric Manager server. The initial snapshot report serves as the *baseline*, and all subsequent snapshot reports are compared to the baseline. Each Change Management profile can have multiple snapshots associated with it.



NOTE: Since each snapshot report is stored on the Fabric Manager server, you must ensure adequate disk space if you are running numerous checks on a large fabric or on multiple fabrics.

Consult the following subsections for information on displaying, exporting, and printing change reports, as well as creating, comparing, exporting, printing, and changing snapshots:

["Displaying a change report"](#) on page 217

["Creating snapshots on demand"](#) on page 218

["Comparing snapshots"](#) on page 218

["Exporting snapshot and change reports"](#) on page 219

["Displaying change reports in external applications"](#) on page 219

["Printing snapshot and change reports"](#) on page 220

["Changing baseline snapshot reports"](#) on page 220

Displaying a change report

A change report is automatically created each time a snapshot (subsequent to the baseline snapshot) is created. The change reports list any changes between the baseline snapshot and the subsequent snapshot.

To compare a snapshot to the baseline configuration:

1. Select **Tools > ChangeMgmt > View Change Reports**.
2. The Fabric Picker dialog box opens (see [Figure 139](#)).

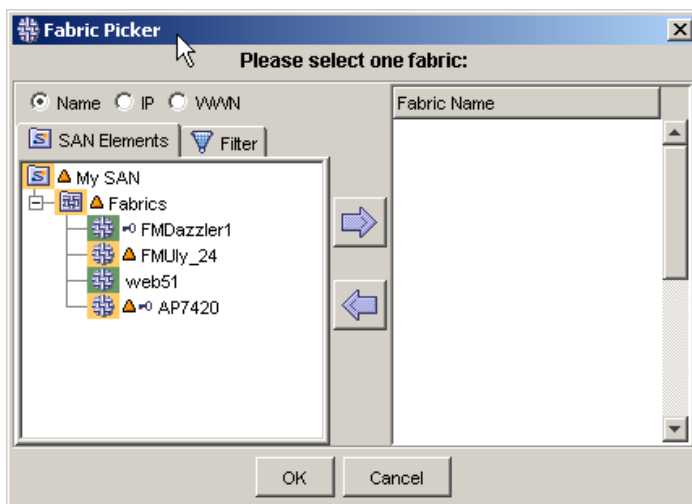


Figure 139 Fabric Picker dialog box

3. Select the fabric containing the change reports you want, click the right-arrow icon to move it to the right window, and then click **OK**.

The Reports dialog box for that switch opens a list of profiles and associated snapshots for that fabric (see [Figure 140](#)).

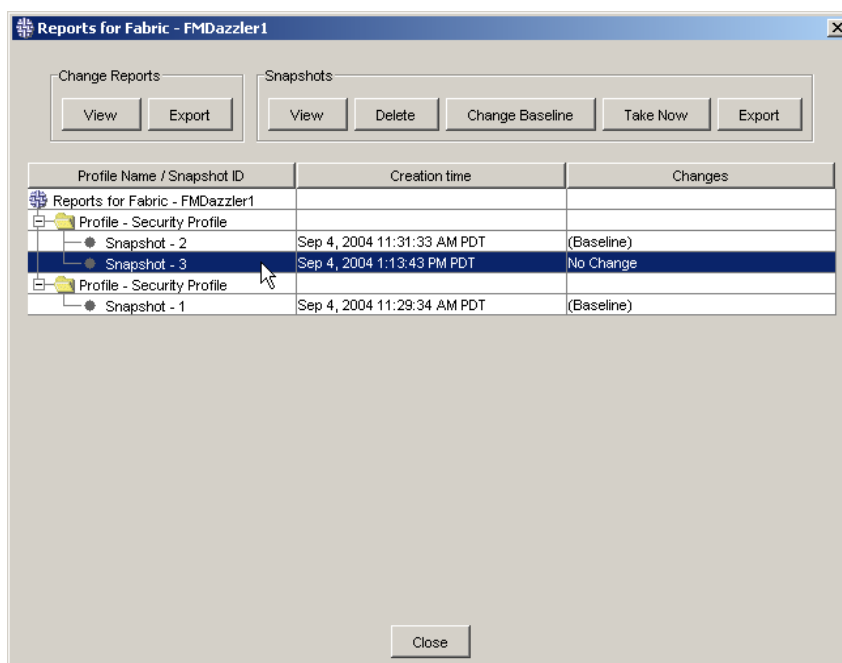
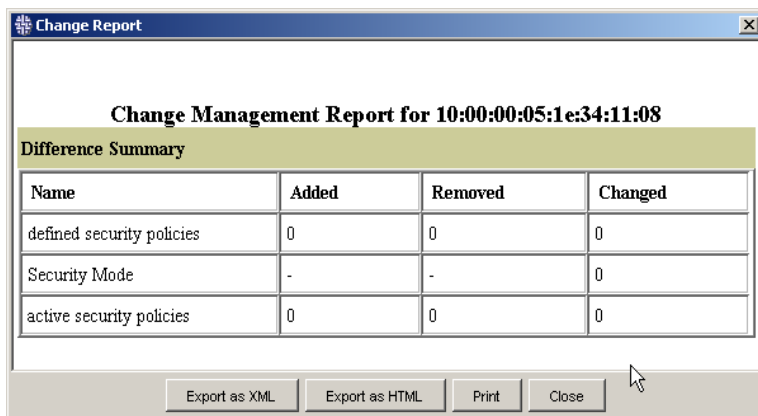


Figure 140 Fabric Reports dialog box

4. Select a snapshot report (other than the baseline) and then click **View** (in the Change Reports area) to access its change report.

The Change Report is displayed (see [Figure 141](#))



Difference Summary			
Name	Added	Removed	Changed
defined security policies	0	0	0
Security Mode	-	-	0
active security policies	0	0	0

Buttons: Export as XML, Export as HTML, Print, Close

Figure 141 Change Report

You can export the report as an XML file or as an HTML file (see ["Exporting snapshot and change reports"](#) on page 219), or print it (see ["Printing snapshot and change reports"](#) on page 220).

Creating snapshots on demand

To create a snapshot on demand:

1. Select **Tools > ChangeMgmt > View Change Reports**.
2. The Fabric Picker dialog box displays (see [Figure 139](#) on page 217).
3. Select the fabric containing the change reports you want, click the right-arrow icon to move them to the right window, and then click **OK**.

The Reports dialog box for that switch opens a list of profiles and associated snapshots for that fabric (see [Figure 140](#) on page 217).

4. Select a snapshot report and then click **Take Now** (under the Snapshots area) to access its change report.

The Change Report is displayed (see [Figure 141](#))

Comparing snapshots

To compare two snapshots:

1. Select **Tools > ChangeMgmt > View Change Reports**.

The Fabric Picker dialog box opens (see [Figure 139](#) on page 217).

2. Select the fabric containing the snapshots you want, click the right-arrow icon to move them to the right window, and then click **OK**.

The Reports dialog box for that switch opens a list of profiles and associated snapshots for that fabric (see [Figure 140](#) on page 217).

3. Select two snapshots from the table (associated with the same Change Management profile) and click **View Change Report**.

The Change Report is displayed (see [Figure 141](#) on page 218)

Exporting snapshot and change reports

To export Change Management reports:

1. Select **Tools > ChangeMgmt > View Change Reports**.

The Fabric Picker dialog box opens (see [Figure 139](#) on page 217).

2. Select the fabric containing the snapshots you want, click the right-arrow icon to move them to the right window, and then click **OK**.

The Reports dialog box for that switch opens a list of profiles and associated snapshots for that fabric (see [Figure 140](#) on page 217).

3. Select a snapshot or change report and then click **View**.

The Change Report is displayed (see [Figure 141](#) on page 218)

4. Select **Export as XML** or **Export as HTML** to export the Change Report in the appropriate file format.

The Save dialog box opens.

5. Enter a name for the file, browse to the location where you want to save the file, and then click **Save**.

Displaying change reports in external applications

When you export Change Management change reports in XML format (see ["Exporting snapshot and change reports"](#) on page 219), an `xslt` file (style sheet) is also saved with the XML file. The `xslt` file can be used to translate the XML file into an Excel spreadsheet or another software applications that allow you to open XML files. You can edit Change Management change reports in the Excel spreadsheet or similar software application.



NOTE: You do not have to use an `xslt` file, but the translated information is not very useful without the style sheet.

To open a Change Management change report (saved as an XML file) in Excel:

1. Launch Excel 2002 (or later).

2. Select **File > Open**.

The Open dialog box opens.

3. Navigate to the XML file and click **Open**.

The Import XML dialog box opens and asks if you want to open a stylesheet.

4. Open the file using one of the following methods:

- Click **Open the file with the following stylesheet applied**

The `xslt` file created by Fabric Manager is the default selected file. You can either use that file, or navigate to another style sheet of your own. Click **OK** to display the information in an Excel spreadsheet.

- Click **Open the file without applying a stylesheet** (not recommended)

The information is displayed in an Excel spreadsheet without formatting.

Printing snapshot and change reports

To print a Change Management report:

1. Select **Tools > ChangeMgmt > View Change Reports**.

The Fabric Picker dialog box opens (see [Figure 139](#) on page 217).

2. Select the fabric containing the snapshot or change report you want, click the right-arrow icon to move it to the right window, and then click **OK**.

The Reports dialog for that switch opens a list of profiles and associated snapshots for that fabric (see [Figure 140](#) on page 217).

3. Select a snapshot or change report and then click **View**.

The Change Report is displayed (see [Figure 141](#) on page 218)

4. Click **Print** to print the change report.

Changing baseline snapshot reports

To change a baseline snapshot report:

1. Select **Tools > ChangeMgmt > View Change Reports**.

The Fabric Picker dialog box opens (see [Figure 139](#) on page 217).

2. Select the fabric containing the baseline snapshot you want, click the right-arrow icon to move it to the right window, and then click **OK**.

The Reports dialog box for that switch opens a list of profiles and associated snapshots for that fabric (see [Figure 140](#) on page 217).

3. Select a snapshot report (other than the baseline) that you want to serve as the new baseline snapshot report.

4. Click **Change Baseline**.

A confirmation appears, indicating that all previous change reports (compared to the previous baseline) will be deleted (see [Figure 142](#)).

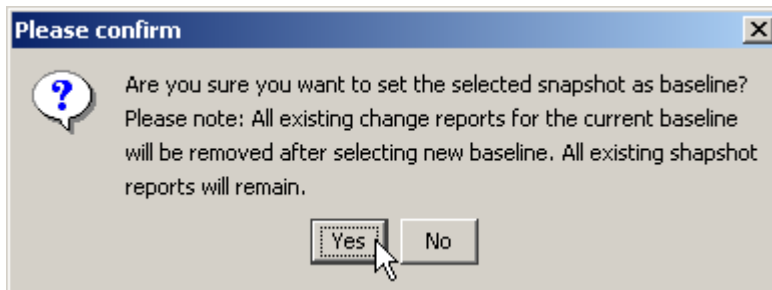


Figure 142 Change baseline confirmation

5. Click **Yes** in the confirmation window to proceed.

A dialog box opens, asking whether you want to regenerate all change reports based on the new baseline.

6. Select one of the following:

Yes to generate new change reports and then click **OK**.

No if you do not want to generate new change reports and then click **OK**.

A confirmation appears, indicating that the baseline has been changed successfully.

Click **Cancel** if you have decided not to change the baseline

The baseline is not changed and the Fabric Reports dialog box opens (see [Figure 140](#) on page 217).

12 Event monitoring

This chapter describes how to use the Events view within Fabric Manager. The Events view (see [Figure 80](#) on page 107) provides a list of events for the element selected from within the SAN Elements tab. [Table 31](#) on page 107 describes the Events view. Fabric events are displayed at the fabric, switch, and switch group levels.

Consult the following sections for information on the Events view:

- ["Viewing fabric events" next](#)
- [Refreshing fabric events](#), page 224
- [Filtering fabric events](#), page 225

Viewing fabric events

You can monitor fabric, switch, and switch group events from the Events view. The Events view allows you to refresh the information on demand (see ["Refreshing fabric events"](#) on page 224), filter events to include only the information you want (see ["Filtering fabric events"](#) on page 225), save the table (see ["Saving Fabric Manager view information"](#) on page 124), sort the contents, and customize the view (see ["Storing data and performing backups"](#) on page 143).

To view fabric events:

1. Select a fabric, switch, or switch group from the SAN Elements tab.
2. Select **View > Events** or click **Events** directly from the View Selector bar.

The Events view displays a list of all the events for the fabric, switch, or switch group you selected from within the SAN Elements tab (see [Figure 143](#)).

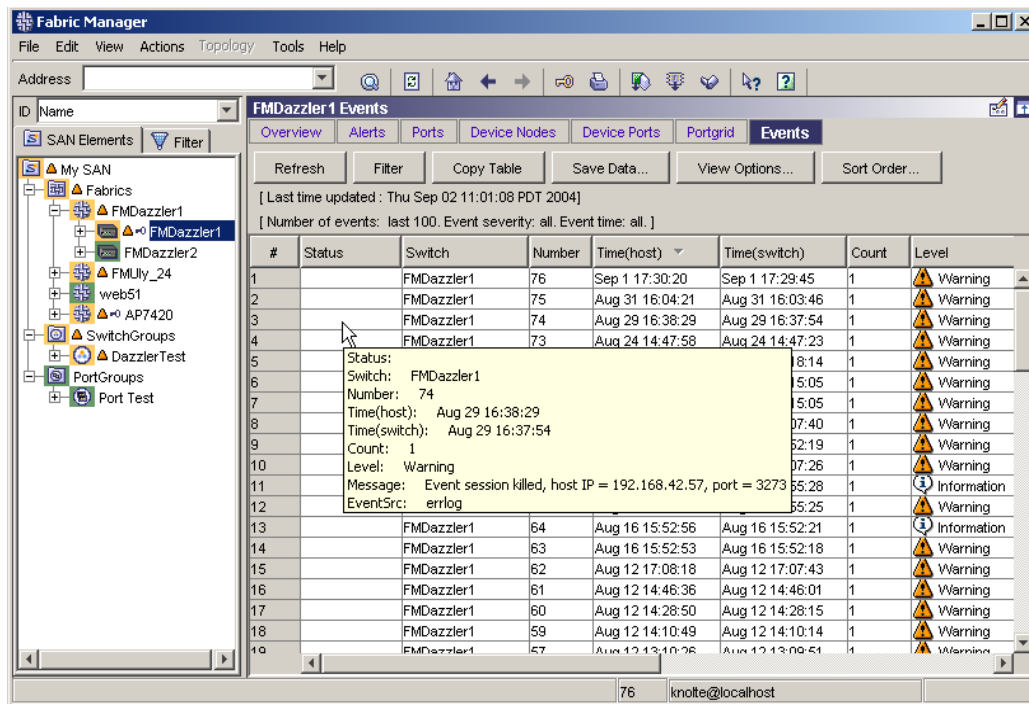


Figure 143 Events view for a switch



NOTE: Place your cursor in any row within [Figure 143](#) and receive a tooltip window listing all of the information for that row (without having to scroll to see each column entry).

Refreshing fabric events

Fabric events are refreshed only on demand.

To refresh fabric events:

1. Select a fabric, switch, or switch group from the SAN Elements tab.
2. Select **View > Events** or click **Events** directly from the View selector bar.

The Events view opens a list of all the events for the fabric, switch, or switch group you selected from within the SAN Elements tab (see [Figure 143](#)).

3. Click **Refresh**.

Filtering fabric events

You can filter the fabric events displayed in the Events view according to the number of events you want to view, the severity level of the events, and the timeframe.

To filter fabric events:

1. Select a fabric, switch, or switch group from the SAN Elements tab.
2. Select **View > Events** or click **Events** directly from the View selector bar.

The Events view opens a list of the events for the fabric, switch, or switch group you selected from within the SAN Elements tab (see [Figure 143](#) on page 224).

3. Click **Filter**.

The Event Filter dialog box opens (see [Figure 144](#)).

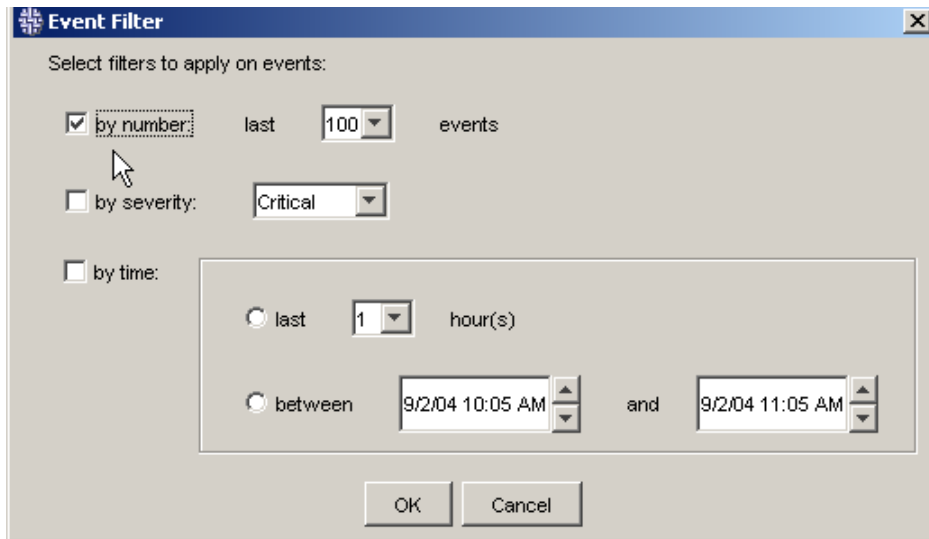


Figure 144 Event Filter dialog box

4. Select the filters. You can use all three filters at one time if you want.
 - Optional: Click **by number** and select the number of events you want to capture. This filter defines how many events are displayed in the Events view at a one time. For a fabric, this is the number of events per switch.
 - Optional: Click **by severity** and select a severity level. This filter displays only events with the specified severity level (Critical, Error, Warning, or Informational).
 - Optional: Click **by time** to specify a time interval. Click **last** and select a number of hour, or click **between** and select a start and finish time.
5. Click **OK**.

13 Managing alerts

This chapter provides information about the alerts generated in Fabric Manager. The Alerts view within Fabric Manager provides a unified list of all of the alerts for any element you are monitoring. The Alerts view lists detailed information about the alerts (see [Figure 69](#) on page 89).

Unacknowledged and unresolved alert information is displayed in bold face type in the Alerts view. See [Table 20](#) on page 89 for a description of the components in the Alerts view. When a fabric is deleted from Fabric Manager, any alerts generated by the fabric or its member switches are deleted from the Fabric Manager database as well. Fabrics and switches with associated alerts have an alerts icon displayed next to the fabric or switch icon in the SAN Elements tab and the At-A-Glance window for that element.

Consult the following sections for information about working with alerts:

- [Identifying alerts](#) next
- [Acknowledging alerts](#), page 230
- [Resolving alerts](#), page 230
- [Deleting alerts](#), page 230

Identifying alerts

Any switches and fabrics with unacknowledged or unresolved alerts (either Critical or Warning level) severity levels are easy to identify in the Fabric Manager GUI:

- Icons are displayed in the SAN Elements tab next to the switch or fabric names and their associated icons for any switches and fabrics that have unacknowledged or unresolved alerts that are at the Critical or Warning severity levels. If a switch has a Critical or Warning severity level alert, the appropriate icon is also displayed at the fabric level of that switch.
- Icons are displayed in the At-A-Glance windows (in the Overview view) next to the switch or fabric icons for the switches and fabrics that have unacknowledged or unresolved alerts that are at the Critical or Warning severity levels.

The Alerts view displays all alerts for all switches and fabrics monitored by Fabric Manager. There are four types of alerts in Fabric Manager (see [Table 54](#)).

Table 54 Alert types

Type of alert	Description
Switch Status Change	<p>Generated whenever a switch changes from a Healthy to Marginal, or from Healthy to Down. Note the following characteristics:</p> <ul style="list-style-type: none"> • If the reason a switch is Marginal or Down changes, but the Marginal or Down status remains unchanged, a new alert is not generated. The original alert remains in the Alerts view but the reason for the Marginal or Down status is updated in the Description column. • If the switch status changes between Marginal and Down, a new alert is not generated. The original alert remains in the Alerts view but the new severity is updated in the Severity column and the reason for the status change is also updated in the Description column. • If the switch status changes from Marginal or Down to Healthy, the original alert remains in the Alerts view but its entry in the Resolved column automatically changes from No to Yes.
Switch Unreachable	<p>Generated whenever the Fabric Manager server is unable to reach a switch. Note the following characteristics:</p> <ul style="list-style-type: none"> • A new alert is not generated as long as the switch remains unreachable. The original alert remains in the Alerts view, but the Last Occurrence column is continuously updated with latest unreachable times until the alert is resolved. • The alert is resolved when the Fabric Manager server is able to reach the switch, if the switch is deleted from either the fabric or Fabric Manager, or if the fabric the switch belongs to is deleted from Fabric Manager.
Change Management	<p>Generated only if you have elected to receive alerts through the Change Management feature in Fabric Manager. Any alerts generated on switches or fabrics as defined in your Change Management profile are also displayed in the Alerts view. Note the following characteristics:</p> <ul style="list-style-type: none"> • If an alert is triggered by a Change Management profile, the alert status is updated each time a scheduled Change Management check is run. If there is no change in the alert status, the original alert is updated continuously in the Last Occurrence column of the Alerts view with the latest unreachable time until the alert is resolved. • If you change the baseline Change Management profile that is configured to trigger alerts, any alerts previously triggered by that defined baseline profile remain in the Alerts view but the status is changed from No to Yes in the Resolved column. Also, the reason for the status change is updated in the Description column to indicate that it is resolved because of a baseline change. <p>See Table 11 Change management administration for additional information about the types of trigger alerts you can set using Change Management profiles.</p>

Table 54 Alert types (continued)

Type of alert	Description
Performance Monitoring	<p>Four types of alerts are generated in Performance Monitoring:</p> <ul style="list-style-type: none"> • Data collection alerts (for port statistics monitoring), if an error occurs at the time of collecting port statistics data, which occurs every 5 or 15 minutes, based on the parameter selected during the Fabric Manager server installation. • Data collection alerts (for end-to-end monitoring), if an error occurs at the time of collecting end-t-end monitors data, which occurs every 5 or 15 minutes, based on the parameter selected during the Fabric Manager server installation. • Verifier alerts for end-to-end monitoring, if an error occurs at the time of verifying or refreshing the end-to-end monitors set for the fabric. • Success alerts for end-to-end monitoring, whenever end-to-end monitors are verified or refreshed successfully. <p>A performance monitor alert gets resolved when the error condition is rectified.</p> <p>Verifier alerts are resolved by either the verification or refresh monitor thread when the error condition that caused the alert is rectified. The verifier thread can also resolve the alert raised by the refresh monitor thread or vice versa.</p> <p>For all operations, an alert is logged the first time the error is encountered and remains unresolved until the operation is successful again or when you turn the performance monitor off.</p> <p>The following occurrences generate an alert at the fabric level:</p> <ul style="list-style-type: none"> • Resource limitation (only for end-to-end performance monitoring) • Performance monitor license removed or unavailable on a switch where end-to-end monitors need to be created. • Any one or a combination of the following: <ul style="list-style-type: none"> • No Performance Monitor license on proxy switch • Insufficient resources in fabric • No firmware support • Source and destination are not in the same zone • Fabric is logically busy • Source or destination does not exist • Authentication failure • Encountering a fabric access exception causes an alert to be logged with an error code and error message, if available • Database exception

Acknowledging alerts

When you acknowledge an alert, the alert icons are not displayed in the SAN Elements tab and At-A-Glance windows in the Overview View. In addition, when you acknowledge an alert, your user name is displayed in the Acknowledger column of the Alerts View. This lets other Fabric Manager users on the same server know that you have already acknowledged the alert and are aware of the issue. Once an alert is acknowledged, it cannot be unacknowledged.

To acknowledge alerts:

1. Select a switch or fabric from the SAN Elements tab.

Any switches or fabrics with alerts include an alert icon adjacent to their name in the SAN Elements tab including the underlying color codes signifying the severity (see [Table 8](#) on page 72).

2. Select **View > Alerts** or click **Alerts** directly from the View selector bar.

The Alerts view opens a list of all the alerts for the switch or fabric you selected from within the SAN Elements tab (see [Figure 69](#) on page 89).

3. Click on the row that lists the alert you want to acknowledge.

4. Click **Ack**.

The Acked column value is changed from No to Yes, the Acked By column value automatically displays your user name, and the Acked Time column value displays the time that you acknowledged the alert. Also, the alert icons displayed in the SAN Elements tab and At-A-Glance windows (within the Overview view) are no longer displayed.

Resolving alerts

Fabric Manager alerts cannot be resolved manually. All alerts within Fabric Manager are automatically resolved when the issue no longer exists, or the baseline has changed so the alert is no longer valid. See [Table 54](#) on page 228 for information about alert resolution scenarios.

Deleting alerts

Fabric Manager alerts must be deleted manually from the Alerts view. You can delete only alerts that have been resolved. Resolved alerts are identified with a Yes value in the Resolved column of the Alerts view.

To delete alerts:

1. Click on a switch or fabric from the SAN Elements tab.

Any switches or fabrics with alerts include an alert icon adjacent to their name in the SAN Elements tab including the underlying color codes signifying the severity (see [Table 8](#) on page 72).

2. Select **View > Alerts**, or click **Alerts** directly from the View selector bar.

The Alerts view displays a list of all the alerts for the switch or fabric you selected from within the SAN Elements tab (see [Figure 69](#) on page 89).

3. Click on the row that lists the alert you want to delete.

You can delete only alerts that have been resolved. Resolved alerts are identified with a Yes value in the Resolved column of the Alerts view.

4. Click **Delete**.

The alert is deleted and removed from the Alerts view.

14 Configuring Call Home support

The Call Home feature of Fabric Manager monitors the status of switches continuously and can be setup to send a Call Home e-mail message to user-defined e-mail addresses and provide an XML file to an external executable whenever a Call Home triggering event occurs. Triggering conditions include the following:

- Switch status changes to either marginal or down
- Switch status remains marginal or down but the reason for the status changes
- Switch reboots
- Switch is unreachable (complete loss of IP connectivity)

Each Call Home alert includes the following information: the reason for the alert and a brief description of the failure and detailed switch information (including the name, IP address, WWN, domain ID, switch type, factory and supplier serial numbers, firmware version, and switch status). The alert also includes the 100 most recent events from the event log and `supportshow` command output in a text file. This chapter consist of the following sections:

- ["Configuring Call Home" next](#)
- [Editing configurations](#), page 235
- [Enabling or disabling Call Home globally](#), page 235
- [Call Home external executable](#), page 235

Configuring Call Home

Each Call Home configuration you create acts independently, without affecting any other configuration. Before you set up Call Home, you must establish the parameters that elicit a notification. See ["Configuring notification parameters"](#) on page 142 for instructions on setting the notification parameters.

To configure *Call Home*:

1. Select **Tools > Call Home**.

The Call Home window opens (see [Figure 145](#)).

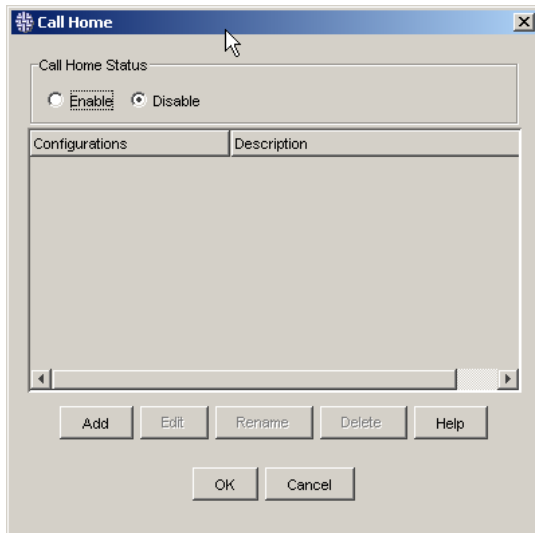


Figure 145 Call Home dialog box

2. Click **Add.**

The Call Home Configuration wizard is launched (see [Figure 146](#)).

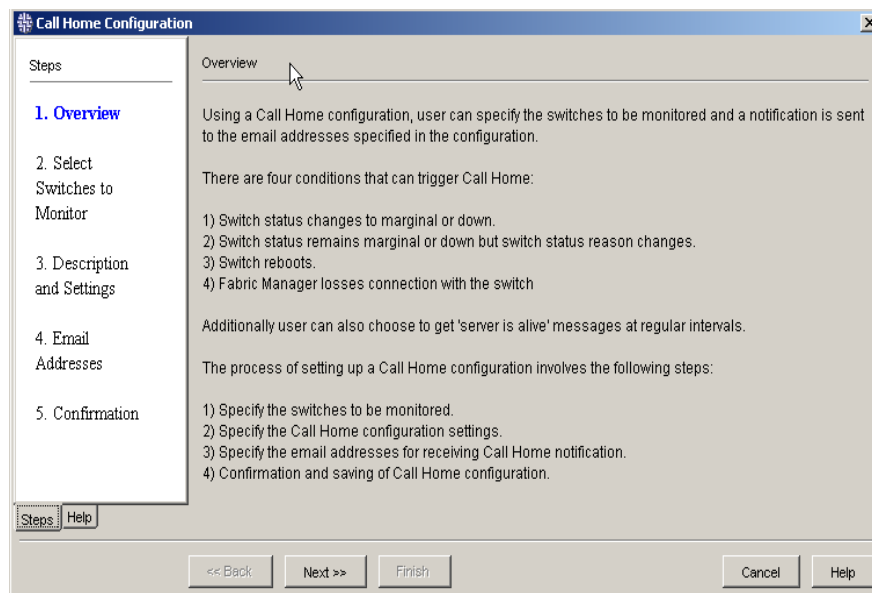


Figure 146 Call Home wizard overview

3. Read the overview and then click **Next.**

A list of the switches you can monitor is provided (see [Figure 147](#)).

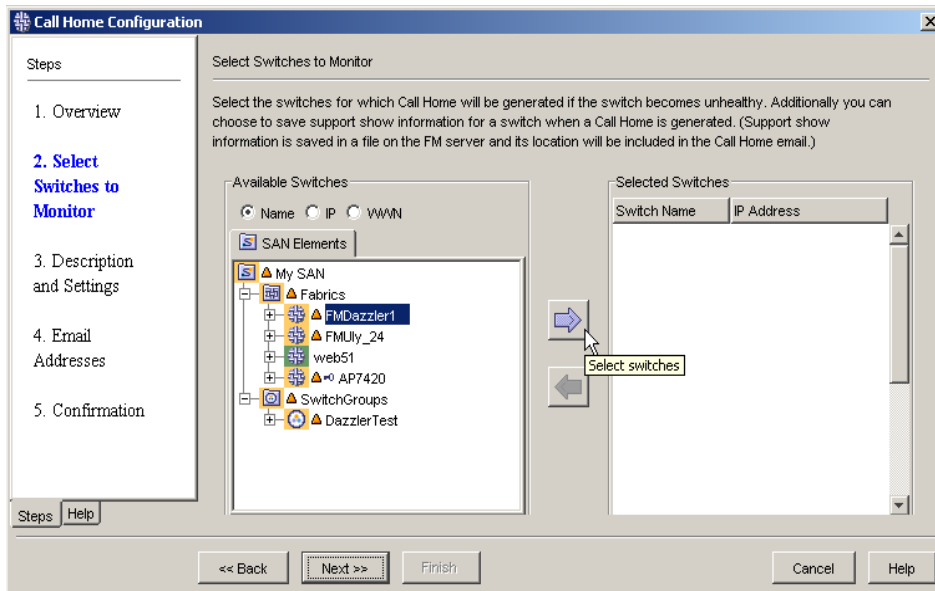


Figure 147 Call Home wizard switch selection

4. Select the switches you want to configure for Call Home purposes and then click the right-arrow to move them to the Selected Switches list.

If log in information has not been established for the selected switches, you are prompted to log in to the switches before continuing the configuration process.

5. Click **Next**.

The Descriptions and Settings window opens (see [Figure 148](#)).

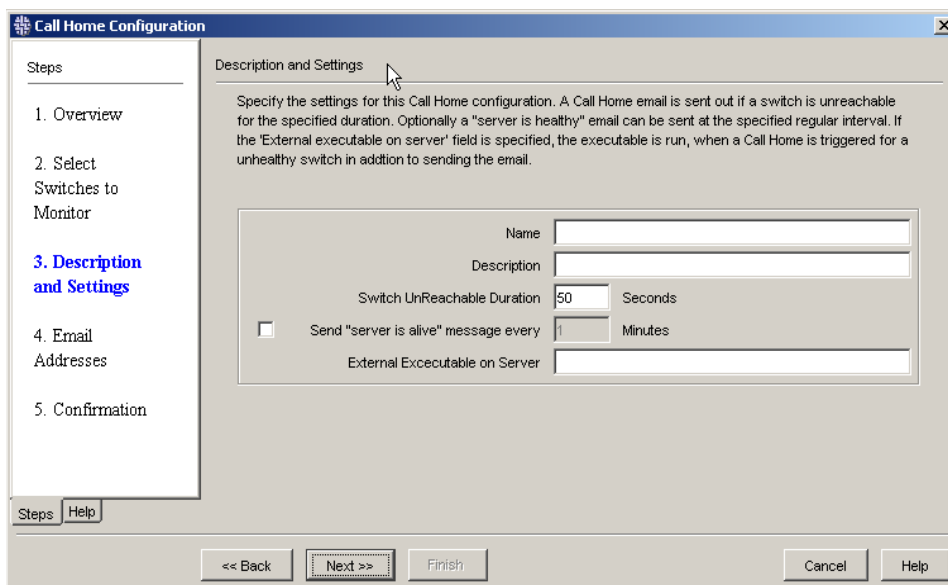


Figure 148 Call Home wizard Description and Settings

6. Enter a name and description for the Call Home configuration.
7. Enter the amount of time (in seconds) that the absence of contact between the server and the switches warrants a Call Home alert (e-mail or executable) about the switches being unreachable.

The minimum allowable time setting is 40 seconds; the default is 50 seconds.

8. Optional: Click the **Send "server is alive" message** check box and provide a time (in minutes) for how often you want to receive notification that the server is running. The default (and minimum value) is one minute intervals. The server is alive messages include the list of switches in the configuration and serves as a notice that Call Home is continuing to function properly.
9. Optional: In the **External Executable on Server** field, enter a path to an executable that resides on the Fabric Manager server. Fabric Manager runs any executable scripts whenever Call Home sends an alert. See ["Call Home external executable"](#) on page 235 for additional information.
10. Click **Next**.
11. Specify the e-mail addresses where the Call Home e-mail notifications are to be sent and then click **Add** to access the Email Address dialog box (see [Figure 149](#)).



NOTE: If you do not want to get e-mail notifications (but only receive the alerts in an external executable), go to [step 13](#). See ["Call Home external executable"](#) on page 235 for additional information.

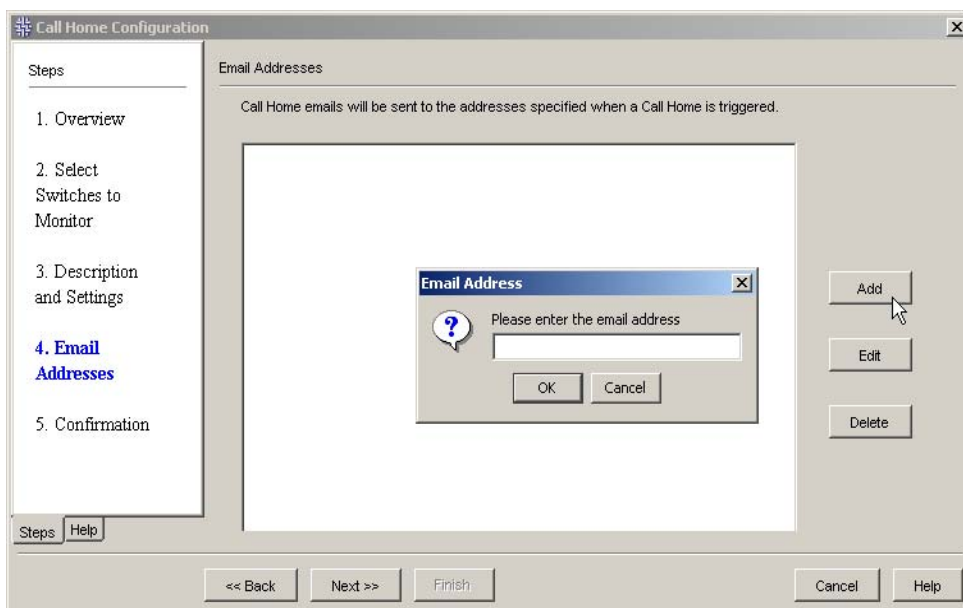


Figure 149 Call Home wizard Email Addresses

12. Enter an e-mail address and then click **OK**.
13. Read the configured Call Home settings and click **Finish**.

A dialog box opens, indicating the success of the new configuration.

14. Click **OK**.
15. Click **Close** to exit the Call Home wizard.

Editing configurations

You can edit a Call Home configuration at any time. Any change that you make applies immediately when you commit the change.

To edit an existing Call Home configuration:

1. Select **Tools > Call Home**.

The Call Home dialog box opens (see [Figure 145](#) on page 232).

2. Select a configuration from the list.
3. Click **Edit** to change the configuration settings.

The Call Home Configuration wizard launches. Use the wizard to edit the configuration (see [step 3](#) through [step 15](#) within the section “[Configuring Call Home](#)” on page 231 for details).

4. Optional: You can click **Rename** to change the name of an existing configuration or click **Delete** to delete an existing configuration.
5. Click **OK** to close the Call Home dialog box.

Enabling or disabling Call Home globally

To enable or disable Call Home globally:

1. Select **Tools > Call Home**.

The Call Home dialog box opens (see [Figure 145](#) on page 232).

2. Click **Enable** or **Disable**. Any change that you make applies immediately when you commit the change.
3. Click **OK**.

Call Home external executable

The Fabric Manager Call Home feature can accept an external executable that runs when a Call Home event occurs. If you configure an external executable, Fabric Manager passes an XML file to the executable whenever a Call Home event occurs. The external executable runs as a background process, and the task manager monitors the process. All other functionality is at your discretion.



CAUTION: Large executables can impair the performance of your server.

The external executable must have the following characteristics:

- It must be capable of being executed by the OS where the Fabric Manager server is installed and it must be a valid binary for that OS (Windows or Solaris).
- It must be able to receive a command-line argument from Fabric Manager. The argument is the name of an XML file that Call Home generates when an event occurs.

For example, if you enter the executable `C:\executable.exe` in the External Executable on Server field in your Call Home window, Call Home launches `C:\executable.exe filename.xml`, where *filename* is the name of the file that is passed as an argument to the executable, when a call home event is triggered.



NOTE: There may be additional executable requirements, depending on your needs.

15 Zone administration

Fabric Manager uses Advanced Web Tools to configure and administer zoning. Web Tools is an optionally licensed product that runs on the HP Fabric OS. This chapter provides Web Tools instructions for switches running Fabric OS v4.4.x. If you have switches running an earlier version of the Fabric OS, refer to the *HP StorageWorks Fabric OS 4.x Advanced Web Tools user guide* supporting the corresponding version.



NOTE: A zoning license and administrative privileges are required to access the zone administration module within Web Tools.

This chapter briefly describes zoning and provides the procedures for managing zoning using Web Tools. It contains the following sections:

- [Introduction to zoning](#), page 237
- [Managing zoning with Advanced Web Tools](#), page 238
- [Managing zone aliases](#), page 255
- [Managing zones](#), page 257
- [Managing QuickLoops](#), page 258
- [Managing fabric assist zones](#), page 260
- [Managing zone configurations](#), page 262
- [Initiator/Target Accessibility Matrix](#), page 268



NOTE: If you plan to add a switch to a fabric that uses zoning, discover that switch with Fabric Manager and run a merge check between that switch and the fabric to which you plan to add it. This check identifies zoning and configuration mismatches before you physically connect the switch. See [Chapter 17, "Fabric merge check"](#) for information about running a merge check on the fabric.

Introduction to zoning

Zoning enables you to partition your storage area network (SAN) into logical groups of devices that can access each other. For example, you can partition your SAN into two zones, winzone and unixzone, so that your Windows servers and storage do not interact with your UNIX servers and storage.

Zones can be configured dynamically. They can vary in size, depending on the number of fabric connected devices, and devices can belong to more than one zone. Because zone members can access only other members of the same zone, a device not included in a zone is not available to members of that zone.

When using a mixed fabric, a fabric containing v4.x, v3.x and v2.x switches, you should use the most advanced switches to perform zoning tasks.

When zone or Fabric Assist (FA) zone members are specified by fabric location (domain, area) only, or by device name (node name or port WWN) only, zone boundaries can be enforced at the hardware level, and the zone is referred to as a *hard zone*.

When zone elements are specified by fabric location (domain, area) and other elements of the same zone are specified by device name (node name or port WWN), zone enforcement depends on name server lookups and the zone is referred to as a *soft zone*.

For more specific information about zoning concepts, refer to the *HP StorageWorks Fabric OS 4.x features overview guide*.

Managing zoning with Advanced Web Tools

You can monitor and manage zoning through the Zone Admin module. The information in the Zone Admin module is collected from the selected switch.



NOTE: If secure mode is enabled, zoning can be administered only from the primary FCS switch. For specific information regarding secure fabrics, refer to the *HP StorageWorks Secure Fabric OS user guide*.

This section provides information about the Zone Admin module within Web Tools (see [Figure 150](#)). It includes information about accessing the module, refreshing fabric and module information, saving any zoning changes, and closing the Zone Admin module; it also describes the different zoning views provided.

Consult the following sections for specific information about the Zone Admin module:

- ["Zoning reference"](#) on page 240
- ["Launching the Zone Admin module"](#) on page 252
- ["Refreshing the fabric information"](#) on page 253
- ["Refreshing the Zone Admin module information"](#) on page 253
- ["Saving local zoning changes"](#) on page 254
- ["Closing the Zone Admin module"](#) on page 254
- ["Zoning views"](#) on page 254

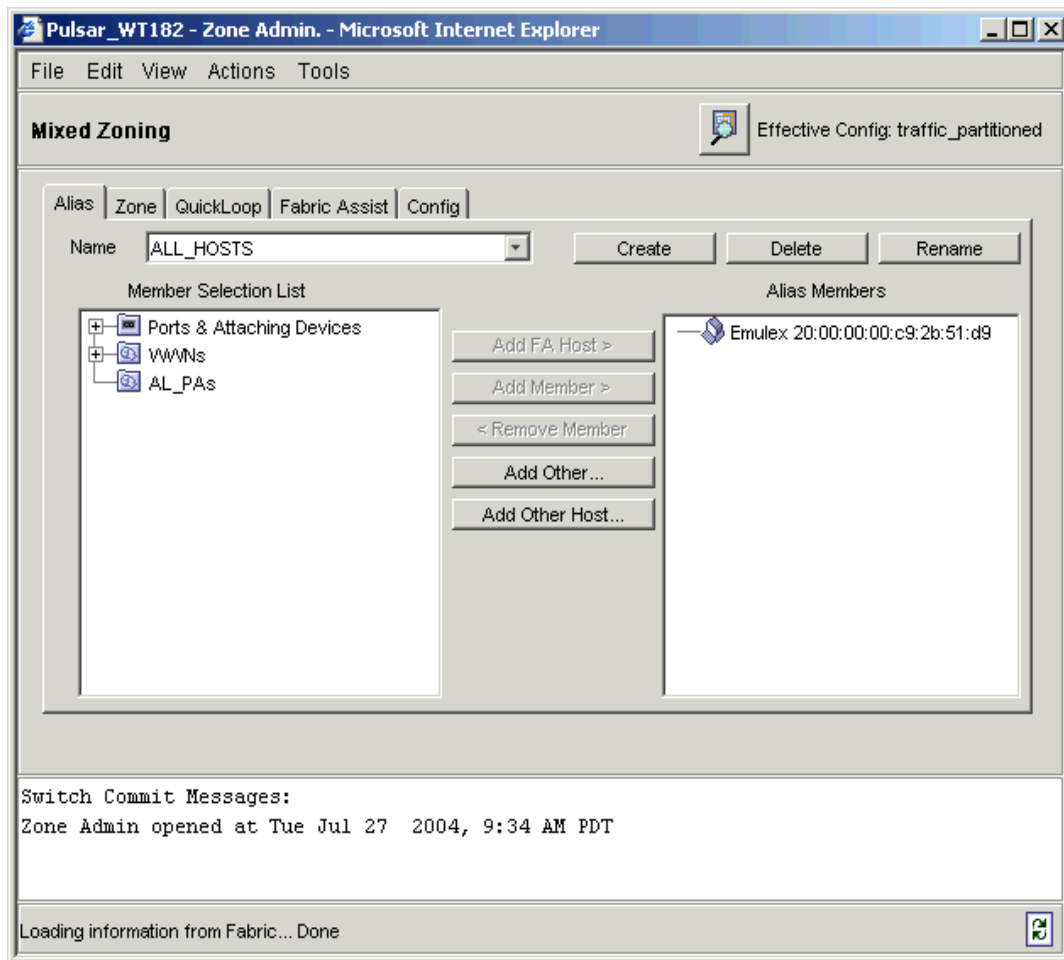


Figure 150 Zone Admin module

In the Zone Admin module, all WWNs also display vendor names. In the member selection, lists in the Zone Admin module that display fabric and device information, you can right-click port and device nodes to display which aliases the port or device is a member of. You can also right-click the device nodes and click View Device Detail to display the Device Detail view, which launches a window displaying detailed information about the selected device (see [Figure 151](#)).

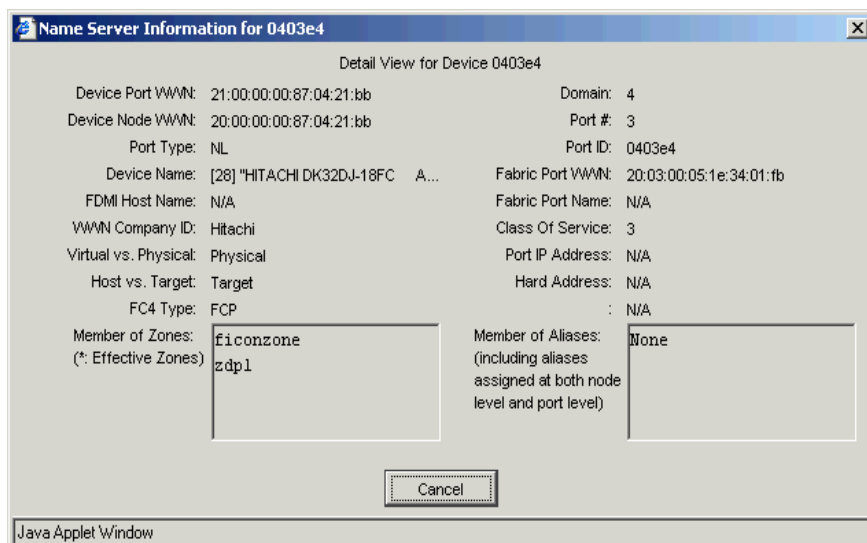


Figure 151 Device detail view

Zoning reference

This section provides information about the Zone Admin module home window (see [Figure 150](#) on page 239), including the available menus and tabs associated with it. [Table 55](#) lists and describes the components of the Zone Admin home window.



NOTE: The views in the Zone Admin module can be slightly different, depending on the version of the Fabric OS running on the switch. The views described in this document are specific to Fabric OS v4.4.x.

Table 55 Zone admin window components

Component	Description
File menu	Administrative options.
Edit menu	Add, delete, replace, and search for zone member identifiers.
View menu	Choose a zoning display.
Actions menu	Enable, disable, and save zoning configurations.
Zoning type display	Display beneath the File menu and display the zoning type that you chose from the View menu.
Enabled config display	Display the enabled zoning configuration.

Table 55 Zone admin window components (continued)

Component	Description
Zoning configuration tabs	<p>Zoning configuration options accessible through tabs:</p> <ul style="list-style-type: none"> • "Alias tab" on page 242 • "Zone tab" on page 244 • "QuickLoop tab" on page 246 • "Fabric assist tab" on page 248 • "Config tab" on page 250

File menu

Table 56 describes the options that appear in the *File* menu of the *Zone Admin* window.

Table 56 File menu options

Option	Description
Print Summary	Select to print a zoning configuration report. A window displays both the effective configuration and the defined zoning configuration, if one exists.
Close	Select to close the Zone Administration window.

Edit menu

Table 57 describes the options that appear in the *Edit* menu of the *Zone Admin* window.

Table 57 Edit menu options

Option	Description
Add WWN	Select to add a WWN across aliases, zones, or Fabric Assist zones. A dialog box opens; enter the WWN number.
Delete WWN	Select to delete a WWN across aliases, zones, or Fabric Assist zones. A dialog box opens; enter the WWN number.
Replace WWN	Select to replace one WWN with another. A dialog box opens; enter first the WWN number to be replaced, and then the new WWN number.
Search Member	<p>Select to search for a member of a zone. A dialog box opens; Enter any element that displays in the Member Selection List: Domain Name, Port name, Port ID, WWN, Device, Zone Name, or Alias Name.</p> <p>Narrow searches by checking one or more of the following boxes:</p> <ul style="list-style-type: none"> • Match Case • Match whole words only • Wrap around. <p>Check the wraparound box if you want the search engine to restart after it reaches the end of the string. Leave unchecked if you want the search engine to stop once it reaches the end of the string; a message appears to indicate the search is complete.</p>

View menu

Table 58 describes the options that appear in the View menu of the Zone Admin window.

Table 58 View menu options

Option	Description
Mixed Zoning	Use the Mixed Zoning option when you want to include various objects as member of an alias, zone, or configuration file.
Port Zoning	Select the Port Zoning option when you want to include only ports in a group. Grouping zones by port alone constitutes hard zoning.
WWN Zoning	Select the WWN Zoning option when you want to zone by World Wide Names. Grouping zones by WWN alone constitutes hard zoning.
AL_PA Zoning	Select the AL_PA Zoning option when you want to create or manage a zone of devices.
Refresh Zoning	Select the Refresh Zoning option to refresh the zoning database. This overwrites any unsaved zoning database changes you have made.
Refresh Fabric	Select the Refresh Fabric option to display the latest fabric changes.

Actions menu

Table 59 describes the options that appear in the Actions menu of the Zone Admin window.

Table 59 Actions menu options

Menu item	Description
Enable Config	Select to save and enable the configuration selected from the Config tab Name field. This command also saves all other configurations in the zoning database.
Disable Zoning	Select to disable the configuration that is currently enabled. A dialog box provides a warning before disabling.
Save Config Only	Select to save all defined zoning configurations. The saved changes apply only to the defined configurations. Changes can be made to a configuration that is currently enabled; changes do not appear until the configuration is disabled and re-enabled.
Clear All	Select to delete all aliases, zones, Fabric Assist zones, and configurations; the cleared configuration is saved. Any enabled configuration is disabled.

Alias tab

Selecting the Alias tab provides data fields to create, modify, rename, or delete aliases in the zoning database (see Figure 152). See Table 60 for a description of the components within the Alias tab view.

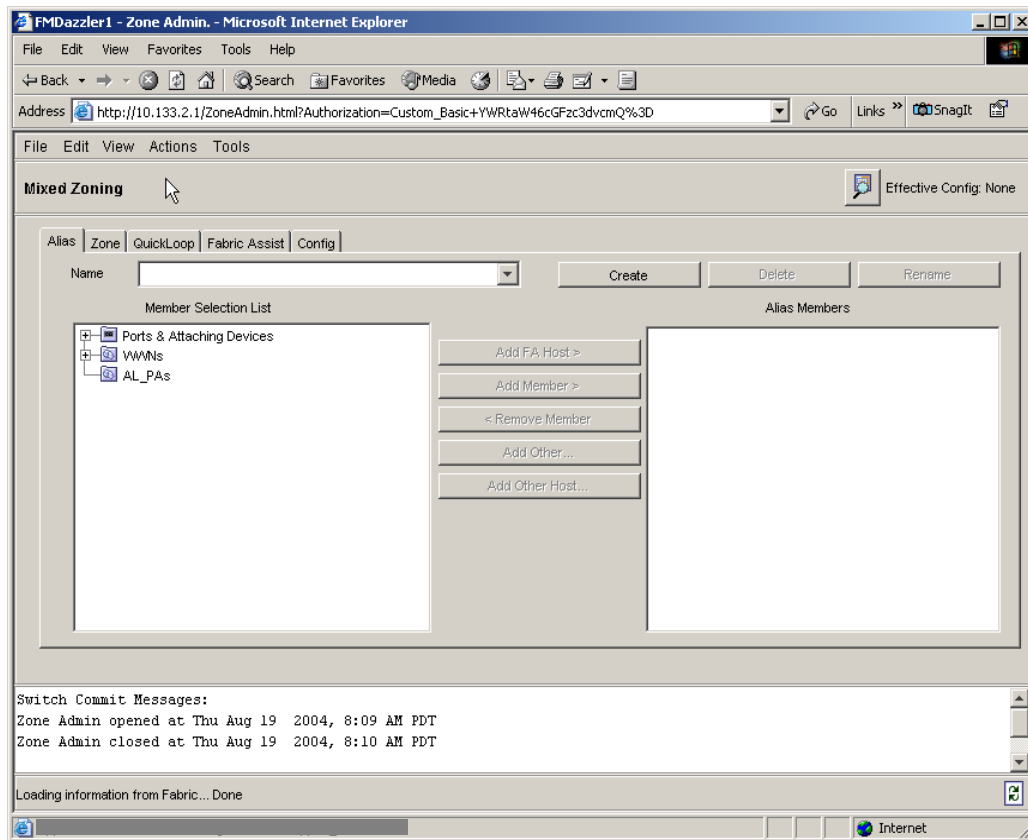


Figure 152 Alias tab within the Zone Admin window

Table 60 Alias tab component descriptions

Component	Description
Name pulldown menu	Displays existing alias names from the pulldown menu.
Create button	Click to create a new alias. A dialog box opens. Enter the name of the new alias. All names must be unique and contain no spaces.
Delete button	Click to delete the alias selected in the Name field. Deleting an alias automatically removes it from all zones, and configurations.
Rename button	Click to rename the alias selected in the Name field. A dialog opens in which you can rename the alias. Renaming an alias automatically renames it in all zones and configurations.
Member Selection List field	Use to select available items from the Member Selection List. In Mixed Zones you can select Ports, WWNs, and AL_PAs.
Alias Members field	Displays the current members of an alias.
Add FA Host button	Click to add a Fabric Assist host to the member list.
Add Member button	Click to add a member from the Member Selection List to the Alias Members field. You must select a member within the Member Selection List for this button to become active.
Remove Member button	Click to remove a member from the Alias Members list. You must select a member within Alias Members for this button to become active.
Add Other button <ul style="list-style-type: none"> • Other • Other Port • Other WWN • Other AL_PA 	Click to add a port, WWN or AL_PA that is not currently part of the fabric. A dialog box opens for you to type in the host that is not a member of the fabric.
Add Other Host button <ul style="list-style-type: none"> • Other Host • Other Port Host • Other WWN Host 	Click to add a host that is not currently part of the fabric. The button displayed depends on the zoning method that you have selected.

Zone tab

The Zone tab provides data fields to create, modify, rename, or delete zones in the zoning database (see [Figure 153](#)). See [Table 61](#) for a description of the components within the Zone tab view.

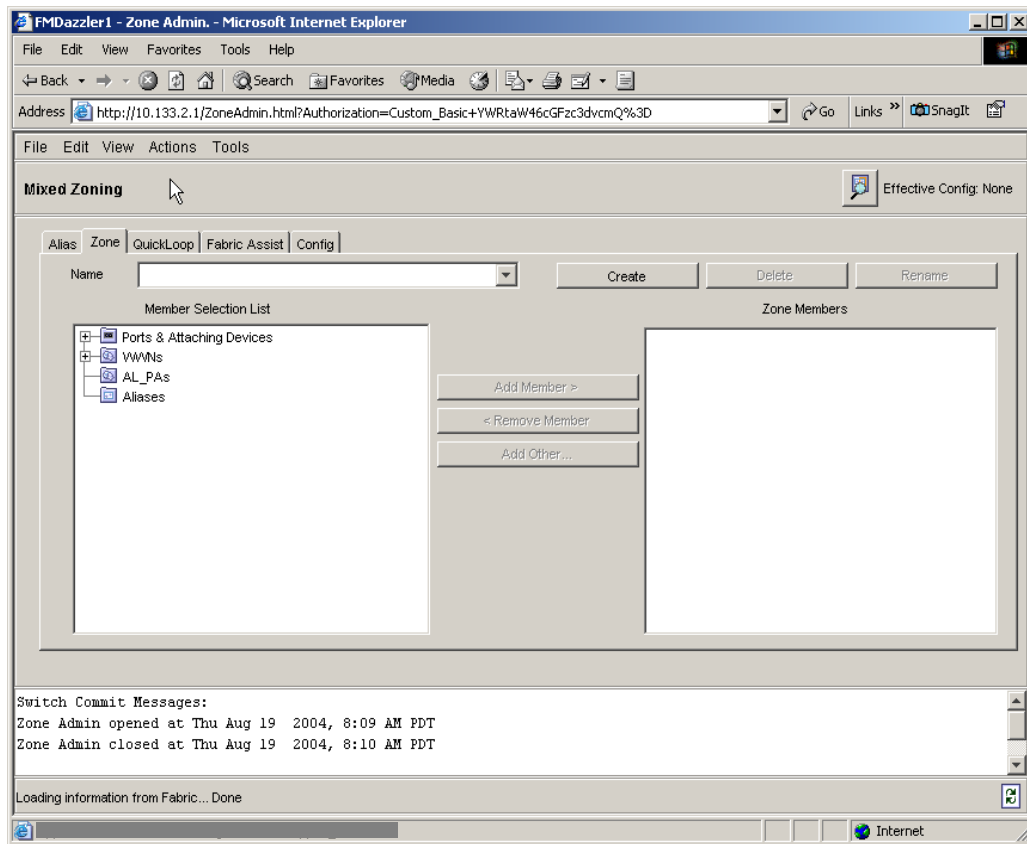


Figure 153 Zone tab within the Zone Admin window

Table 61 Zone tab component descriptions

Component	Descriptions
Name pulldown menu	Displays existing zones from the pulldown menu.
Create button	Click to create a new zone. A dialog box opens. Enter the name of the new zone. All zone names must be unique and must consist of letters, numbers, or the underscore character. Spaces or special characters are not allowed in zone names, and a name cannot start with a number.
Delete button	Click to delete the zone selected in the Name field. Deleting a zone automatically removes it from all configurations.
Rename button	Click to rename the Zone selected in the Name field. A dialog box opens in which you can edit the zone name. Renaming a zone in the zone tab automatically renames it in all configurations.
Member Selection List field	Select available items from the Member Selection List.
Zone Members field	Displays the current members of a zone.
Add Member button	Click to add a member from the Member Selection List to the Zone Members field. You must select a member within the Member Selection List for this button to become active.
Remove Member button	Click to remove a member from the Zone Members list. You must select a member within Zone Members for this button to become active.
Add Other <ul style="list-style-type: none"> • Other Port • Other WWN • Other AL_PA 	Click to add a port, WWN or AL_PA that is not currently part of the fabric. A dialog box opens for you to type in the host that is not a member of the fabric.

QuickLoop tab

Selecting the QuickLoop tab provides access for managing QuickLoops in the zoning database (see [Figure 154](#)). See [Table 62](#) for a description of the components within the QuickLoop tab view.

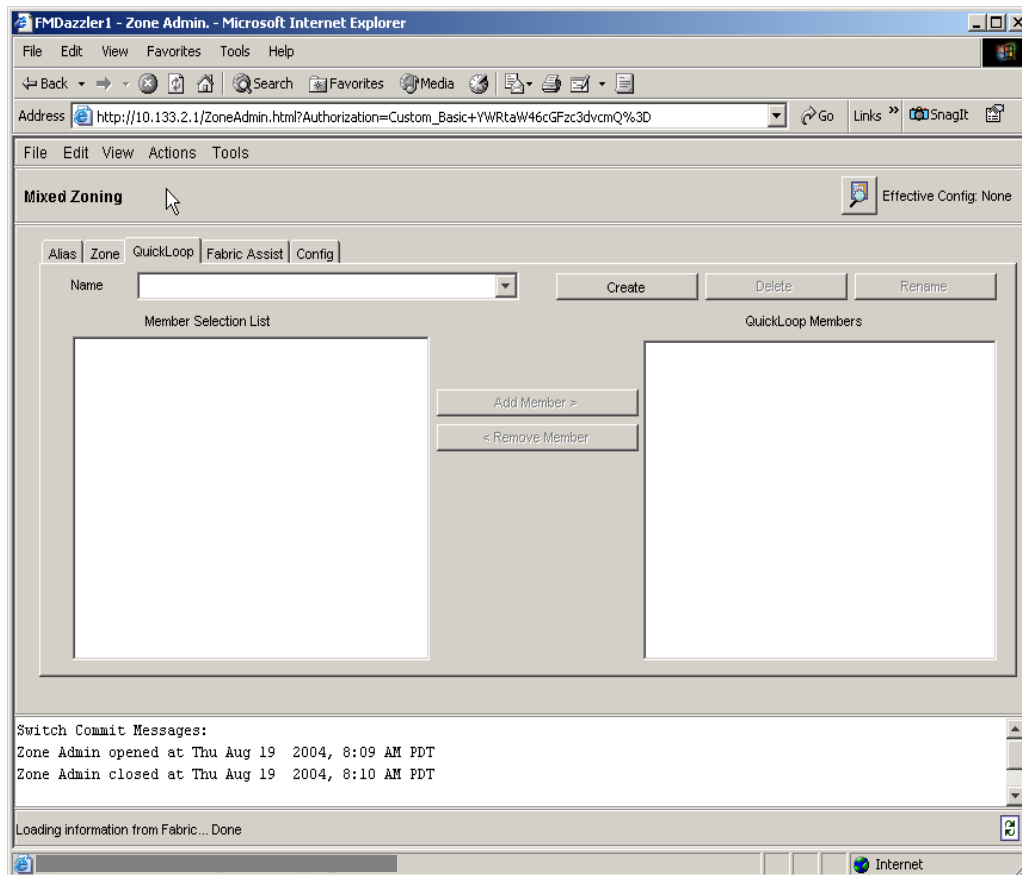


Figure 154 QuickLoop tab within the Zone Admin window

Table 62 QuickLoop tab component descriptions

Component	Description
Name pulldown menu	Displays existing QuickLoops.
Create button	Click to create a new QuickLoop. A dialog box opens. Enter the name of the new QuickLoop. All names must be unique and contain no spaces.
Delete button	Click to delete the QuickLoop selected in the Name pulldown menu. Deleting a QuickLoop automatically removes it from all configurations.
Rename button	Click to rename the QuickLoop selected in the Name pulldown menu. A dialog box opens in which you can edit the QuickLoop name. Renaming a QuickLoop automatically renames it in all configurations.
Member Selection List field	Select available members from the Member Selection List. QuickLoop is not supported on switches that run firmware versions 4.x. However, you can manage a QuickLoop from these switches if it is attached to another switch in the fabric.
QuickLoop Members field	Displays the current members of a QuickLoop.
Add Member button	Click to add a member from the Member Selection List to the QuickLoop Members field. You must select a member within the Member Selection List for this button to become active.
Remove Member button	Click to remove a member from the QuickLoop Members field. You must select a member within QuickLoop Members field for this button to become active.

Fabric assist tab

Selecting the Fabric Assist tab provides data fields to create and manage Fabric Assist zones in the zoning database (see [Figure 155](#)). Fabric Assist allows private hosts to communicate with public targets across a switched fabric. Fabric Assist also allows private hosts to communicate with public targets that do not reside on the same switch. See [Table 63](#) for a description of the components within the Fabric Assist tab view.



NOTE: You cannot create a fabric zone without a fabric host. Nor can you access the Fabric Assist tab if you selected View > AL_PA Zoning.

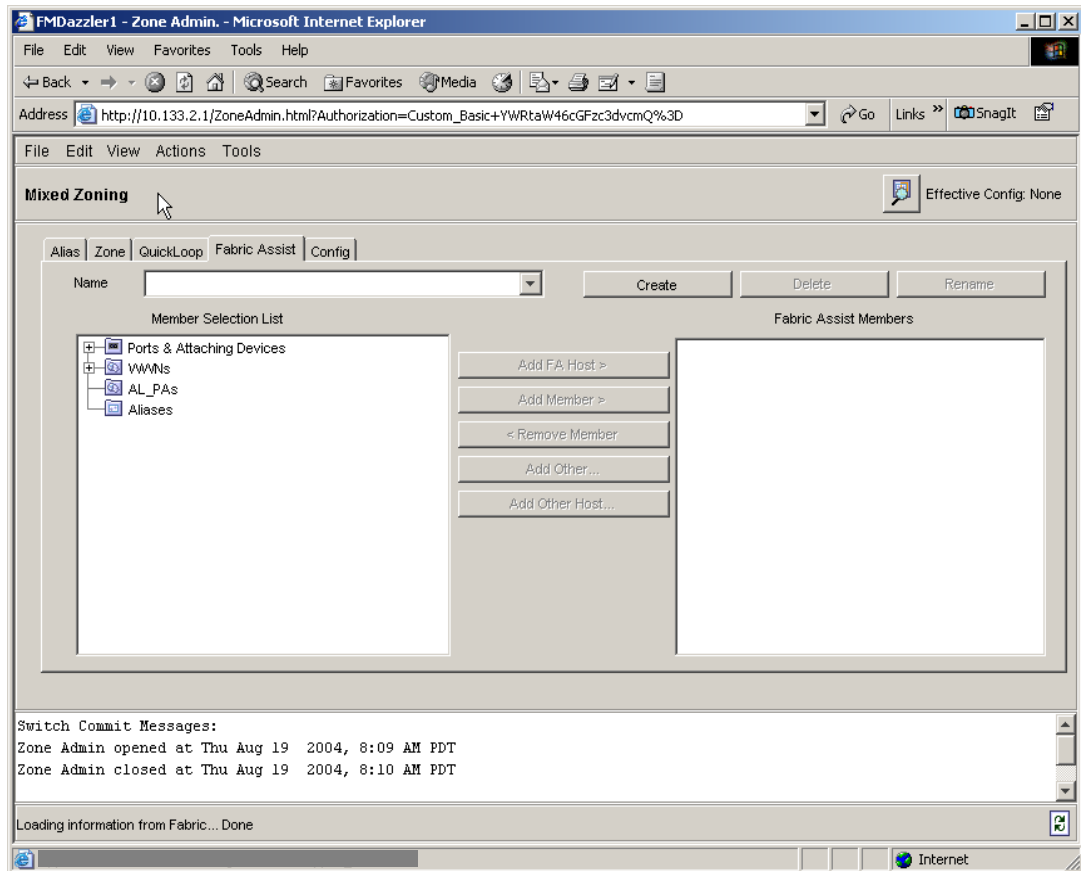


Figure 155 Fabric Assist tab within the Zone Admin window

Table 63 Fabric Assist components descriptions

Components	Descriptions
Name pulldown menu	Displays existing Fabric Assist zones from the pulldown menu.
Create button	Click to create a new Fabric Assist zone. A dialog box opens; Enter the name of the new Fabric Assist zone. All names must be unique and contain no spaces.
Delete button	Click to delete the Fabric Assist zone selected in the Name pulldown menu. Deleting a Fabric Assist Zone automatically removes it from configurations.
Rename button	Click to rename the Fabric Assist zone selected in the Name pulldown menu. A dialog box opens in which you can edit the Fabric Assist name. Renaming a Fabric Assist Zone automatically renames it in all configurations.
Member Selection List field	Selects available items from the Member Selection List.
Fabric Assist Members field	Displays the current members of a Fabric Assist zone.
Add FA Host button	Click to add a Fabric Assist host that is not currently part of the fabric.
Add Member button	Click to add a member from the Member Selection List to the Fabric Assist Members field. You must select a member within Member Selection List for this button to become active.
Remove Member button	Click to remove a member from the Fabric Assist Members list. You must select a member within Fabric Assist Members field for this button to become active.
Add Other button <ul style="list-style-type: none"> • Other • Other Port • Other WWN • Other AL_PA 	Click to add a Fabric Assist zone that is not currently part of the fabric. A dialog box opens for you to enter the host that is not a member of the fabric.
Add Other Host button <ul style="list-style-type: none"> • Other Host • Other Port Host • Other WWN Host 	Click to add a host that is not currently part of the fabric. The button displayed depends on the zoning method selected.

Config tab

Selecting the Config tab provides data fields to create and manage configurations (see [Figure 156](#)). See [Table 64](#) for a description of the components within the Config tab view.

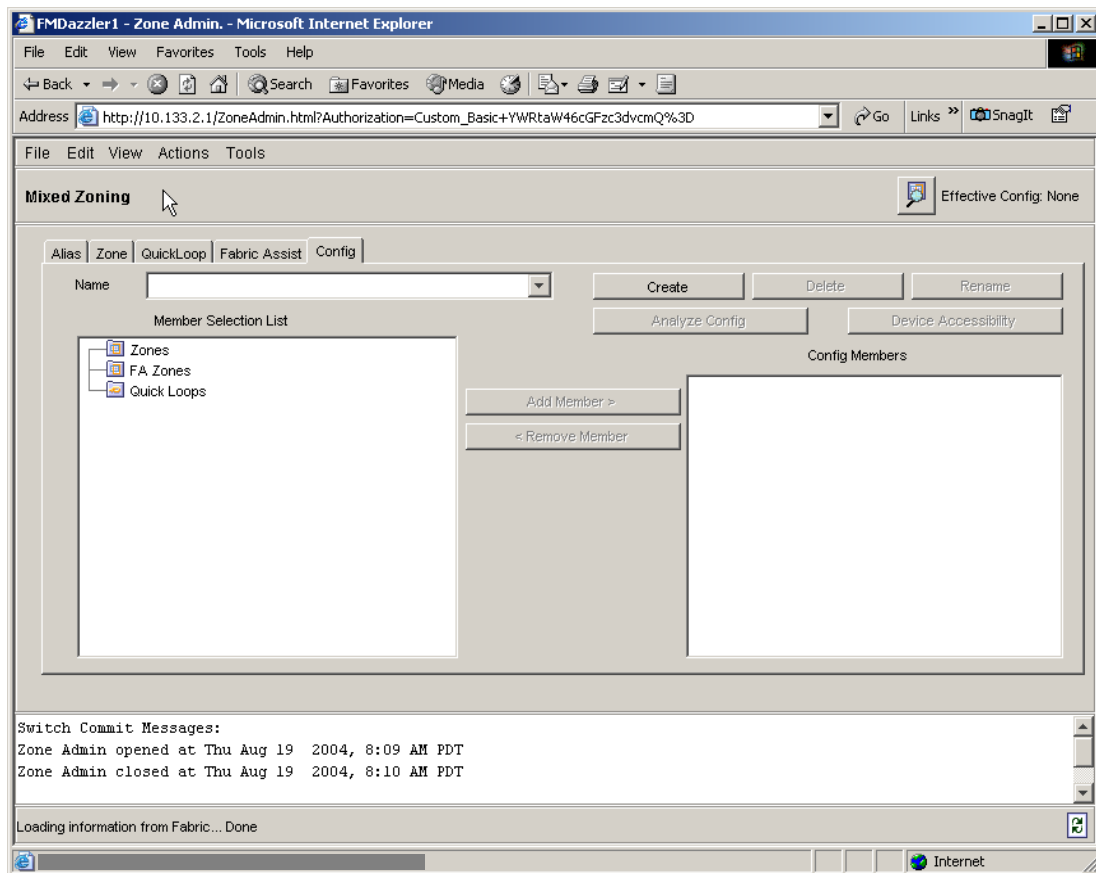


Figure 156 Config tab within the Zone Admin window

Table 64 Config tab component descriptions

Component	Description
Name pulldown menu	Select an existing configuration from the pulldown menu to display or modify.
Create button	Click to create a new configuration. A dialog box opens; enter the name of the new configuration. All names must be unique and contain no spaces.
Delete button	Click to delete the configuration selected in the Name pulldown menu. Deleting a configuration does not delete any of the elements contained in that configuration.
Rename button	Click to rename the configuration selected in the Name pulldown menu. A dialog box opens in which you can edit the configuration name.
Member Selection List field	Select available items from the Member Selection List.
Config Members field	Display the current config members.
Add Member button	Click to add a member from the Member Selection List to the Config Members field. You must select a member within the Member Selection List for this button to become active.
Remove Member button	Click to remove a member from the Config Members List. You must select a member within Config Members field for this button to become active.
Analyze Config button	Analyzes the configuration that is selected along with its member zones. A report is created that lists: <ul style="list-style-type: none">• SAN components (ports, WWNs, and AL_PAs) that are not included in the configuration.• SAN components (ports, WWNs, and AL_PAs) that are contained in the configuration but not in the fabric.

Launching the Zone Admin module

This section describes how to launch the Zone Admin module, from which all zoning procedures are performed.

To launch the Zone Administration module:


1. Click the fabric you want to view from the SAN Elements tab.
2. Select the **Actions>Zone Admin**.

Web Tools launches and prompts you to log in to the Zone Admin module.

3. Enter the admin user name and password.

The Zone Admin module opens (see [Figure 150](#) on page 239).

In the Zone Admin module, you can right-click the name of a device in the Member Selection list to launch the Device Detail view for that element.

You can click the enabled configuration button  (located in the top right corner of the Zone Admin module) to view the effective zoning configuration (a separate window opens).

A live snapshot is taken of all the zoning configurations at the time you launch the Zone Admin module. Information displayed in the Zone Admin module is not updated automatically by Web Tools.

If anyone changes the zone configurations after you launch the Zone Admin module, the refresh icon (in the bottom right corner of the window) blinks. When you click the refresh icon, any changes made in the Zone Admin session that are not saved, are lost; the latest Zone Configuration information is displayed in the Zone Admin module.

Refreshing the fabric information

This function refreshes the display of fabric elements (switches, ports, devices, and AL_PAs) only. It does not affect any zoning element changes or update zone information in the Zone Admin module. To refresh the zone information displayed in the Zone Admin module, see ["Refreshing the Zone Admin module information"](#) on page 253.


The purpose of this option is to refresh the fabric information:

- In the Zone Admin module, select **View > Refresh Fabric**.

This refreshes the status for the fabric, including switches, ports, and devices.

Refreshing the Zone Admin module information

The information displayed in the Zone Admin module is initially a snapshot view of the current contents of the zoning database on the fabric at the time the module is launched. Any changes you make to this view are saved to a local buffer and not applied back to the fabric zoning database until you invoke one of the transactional operations listed in the Actions menu.

Because the initial zoning database image plus any local zoning changes are buffered by the Zone Admin module until explicitly saved to the fabric, if the fabric zoning database is independently changed by another user or from another interface (for example, the CLI) while Web Tools zoning changes are still pending, the refresh icon  starts to blink (after a 15 second polling delay). You can then choose to refresh the current Web Tools zoning view to reflect the new, externally changed contents of the fabric zoning database as described below (in this case, any pending local changes are lost), or you can ignore the blinking refresh icon and save the local changes anyway, overwriting the external changes that triggered the icon to blink.

Another use of the Refresh Zoning operation is to get a fresh start by discarding any local changes that have been made since the last save operation.


You can refresh the zoning information at any time, either using the refresh icon (whether it is flashing or not) or from the View menu.

The following procedure updates the information in the Zone Admin module with the information saved in the zoning database on the switch.



CAUTION: When you refresh the buffered information in the Zone Admin module, any zoning configuration changes you have made and not yet saved or activated are erased from the buffer and replaced with the currently enabled zone configuration information.

To refresh the local Zone Admin buffer from the fabric zoning database:

1. Launch the Zone Admin module as described in ["Launching the Zone Admin module"](#) on page 252.
2. Select **View > Refresh Zoning** or click the zone refresh icon  (located in the lower right corner of the Zone Admin module).

This refreshes the information in the Zone Admin module with the information in the switch's zoning database. This action also refreshes the fabric information as described in ["Refreshing the fabric information"](#) on page 253. Any unsaved zoning changes are deleted.

Saving local zoning changes

Any changes you make in the Zone Admin module are in a buffered environment and do not update the zoning database until you save the changes. If you close the Zone Admin module without saving your changes, your changes are lost.

All information displayed and all changes made in the Zone Admin module are buffered until you save the changes. That means that any other user looking at the zone information for the switch does not see the changes you have made until you save them. Saving the changes propagates any changes you have made in the Zone Admin module (buffered changes) to the zoning database on the switch. If another user has a zoning operation in progress at the time that you attempt to save changes, a warning is displayed that indicates that another zoning transaction is in progress on the fabric. You can select to abort the other transaction and override it with yours.

This action updates the entire contents of the Zone Admin module, not just the selected zone, alias, or configuration.

To save Zone Admin module changes to the switch zoning database:

1. Make your zoning changes in the Zone Admin module.
2. Select **Actions > Save Config Only**.



NOTE: If you have made changes to a configuration, you must enable the configuration before the changes will be effective. To enable the configuration, see [“Enabling a zone configuration”](#) on page 264.

Closing the Zone Admin module

It is important to remember that any changes you make in the Zone Admin module are not saved automatically. There are two ways to close the Zone Admin module, and only one of them warns you if you are trying to close the Zone Admin module without saving recent changes.



CAUTION: If you click the X in the top right corner of the Zone Admin module, the Zone Admin session is closed immediately, and any changes you made without saving are lost. To avoid potential loss of data, use the following procedure to close the Zone Admin module. In this procedure, the Zone Admin session displays a warning if you have unsaved changes when you are trying to close the Zone Admin module.

To close the Zone Admin module:

1. From the Zone Admin module, select **File > Close**.

If any changes exist in the buffer that have not been saved, a warning dialog box opens, asking you to confirm that you want to close the Zone Admin session without saving the changes.

Click **Yes** to close without saving changes or click **No** to go back to the Zone Admin module to save the changes as described in [“Saving local zoning changes”](#) on page 254.

Zoning views

You can choose how zoning elements are displayed in the Zone Admin module. The zoning view you select determines how members are displayed in the various member selection windows. The views filter the fabric and device information displayed in the member selection list for the selected view making it easier for you to create and modify zones, especially when creating hard zones.

Depending on the method you use to zone, certain tabs may not be available in the Zone Admin window. For example, the Fabric Assist tab (see ["Fabric assist tab"](#) on page 248) is not available if you select AL_PA zoning.

There are four views of defining members for zoning:

Mixed zoning This view displays the port area number, device WWNs, or QuickLoop AL_PAs and is useful when creating a soft zone.

Port zoning This view displays port area numbers only and is useful when creating a hard zone.

WWN zoning This view displays device WWNs only and is useful when creating a hard zone

AL_PA zoning This view displays QuickLoop AL_PAs only and is useful when creating a soft zone.

To select a zoning view:

1. Launch the Zone Admin module as described in ["Launching the Zone Admin module"](#) on page 252.
2. From the View menu, select one of the following:
 - Mixed Zoning
 - Port Zoning
 - WWN Zoning
 - AL_PA Zoning

Managing zone aliases

An alias is a logical group of port area numbers, WWNs, or AL_PAs. Specifying groups of ports or devices as an alias makes zone configuration easier by enabling the configuration of zones using an alias rather than a long string of individual members. Specify members of an alias using the following methods:

- A switch domain and port area number pair, for example: 2, 20
- Device node and device port WWNs
- QuickLoop AL_PAs

Consult the following subsections for procedures about managing zone aliases:

- ["Creating a zone alias"](#) next
- ["Adding and removing members of a zone alias"](#) on page 256
- ["Renaming a zone alias"](#) on page 256
- ["Deleting a zone alias"](#) on page 256

Creating a zone alias

Use the following procedure to create a zone alias:

1. Launch the Zone Admin module as described in ["Launching the Zone Admin module"](#) on page 252.
2. Select a format to display zoning members in the member selection list as described in ["Zoning views"](#) on page 254.
3. Select the **Alias** tab.
4. Click **Create**.

The Create New Alias dialog box opens.

5. Enter a name for the new alias and click **OK** in the Create New Alias dialog box.
The new alias displays in the Name list in the Alias tab.
6. Click + signs in the Member Selection List to view the nested elements.
The choices available in the Member Selection List depend on the selection made in the View menu.
7. Select an element in the Member Selection List that you want to include in your alias.
The **Add Member** button becomes active.
8. Click **Add Member** to add alias members.
Selected members move to the Alias Members window.
9. Optional: Repeat steps [step 7](#) and [step 8](#) to add more elements to your alias.
10. Optional: Click **Add Other** to include a WWN, port, or QuickLoop (AL_PA) that is not currently a part of the fabric.

Adding and removing members of a zone alias

Use the following procedure to add or remove zone alias members:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **Alias** tab.
3. Select the alias you want to modify from the Name menu.
4. Highlight an element in the **Member Selection List** that you want to add to your alias, or highlight an element in the **Alias Members** list that you want to delete.
5. Click **Add Member** to add the selected alias member. Click **Remove Member** to remove the selected alias member.

Renaming a zone alias

Use the following procedure to change the name of a zone alias:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **Alias** tab.
3. Select the alias you want to rename from the Name menu.
4. Click **Rename**.
The Rename an Alias dialog box opens.
5. Enter a new alias name and click **OK**.
The alias is renamed in the Zone Admin buffer.

Deleting a zone alias

You can remove a zone alias from the Zone Admin buffer. When a zone alias is deleted, it is no longer a member of the zones it was once a member of.

To delete a zone alias:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **Alias** tab.
3. Select the alias you want to delete from the Name menu and click **Delete**.
The Confirm Deleting Alias dialog box opens.

4. Click **Yes**.

The selected alias is deleted from the Zone Admin buffer.

Managing zones

A zone is a region within the fabric in which specified switches and devices can communicate. A device can communicate only with other devices connected to the fabric within its specified zone. You can specify members of a zone using the following methods:

- Alias names
- Switch domain and port area number pair: for example, 2, 20
- WWN (device)
- QuickLoop AL_PAs (device)

Consult the following sections for procedures about managing zones:

- ["Creating a zone"](#) next
- ["Adding and removing the members of a zone"](#) on page 258
- ["Renaming a zone"](#) on page 258
- ["Deleting a zone"](#) on page 258

Creating a zone

Use the following procedure to create a zone:

1. Launch the Zone Admin module as described in ["Launching the Zone Admin module"](#) on page 252.
2. Select a format to display zoning members in the member selection list as described in ["Zoning views"](#) on page 254.
3. Select the **Zone** tab.
4. Click **Create**.

The Create New Zone dialog box opens.

5. Enter a name for the new zone in the Create New Zone dialog box and click **OK**.

The new zone displays in the Name list.

6. Click + signs in the Member Selection List to view the nested elements.

The choices available in the Member Selection List depend on the selection made in the View Menu.

7. Select an element in the Member Selection List that you want to include in your Zone.

The **Add Member** button becomes active.

8. Click **Add Member** to add the zone member.

The selected member is moved to the Zone Members Window.

9. Repeat [step 7](#) and [step 8](#) to add more elements to your zone.

10. Optional: Click **Add Other** to include a WWN, port, or QuickLoop (AL_PA) that is not currently a part of the fabric.

Adding and removing the members of a zone

Use the following procedure to add or remove zone members:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **Zone** tab.
3. Click the zone you want to modify from the Name menu.
The zone members for the selected zone are listed in the Zone Members list.
4. Click an element in the Member Selection List that you want to include in your zone, or click an element in the Zone Members list that you want to delete.
5. Click **Add Member** to add a zone member. Click **Remove Member** to remove a zone member.

Renaming a zone

Use the following procedure to change the name of a zone:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **Zone** tab.
3. Select the zone you want to rename from the Name menu.
4. Click **Rename**.
The Rename a Zone dialog box opens.
5. Type a new zone name and click **OK**.
The zone is renamed in the Zone Admin buffer.

Deleting a zone

Use the following procedure to delete a zone.

To delete a zone:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **Zone** tab.
3. Select the zone you want to delete from the Name menu.
4. Click **Delete**.
The Confirm Deleting Zone dialog box opens.
5. Click **Yes**.
The selected zone is deleted from the Zone Admin buffer.

Managing QuickLoops

QuickLoop is an HP software product that allows multiple ports on a switch to create a logical loop. Devices connected through QuickLoop appear to each other as if they are on the same arbitrated loop.

QuickLoop can be administered using Fabric OS v4.x versions; however, switches or directors running Fabric OS v4.x cannot be members of a QuickLoop. The SAN Director 2/128, Core Switch 2/64, SAN Switch 4/32, SAN Switch 2/32, SAN Switch 2/16V, and SAN Switch 2/8V do not support QuickLoop.



NOTE: You must have a QuickLoop license installed to create or modify a QuickLoop.

Consult the following subsections for procedures about QuickLoops:

- ["Creating a QuickLoop"](#) next
- ["Adding and removing members of a QuickLoop"](#) on page 259
- ["Renaming a QuickLoop"](#) on page 260
- ["Deleting a QuickLoop"](#) on page 260

Creating a QuickLoop

Use the following procedure to create a QuickLoop:

1. Launch the Zone Admin module as described in ["Launching the Zone Admin module"](#) on page 252.
2. Select a format to display zoning members in the member selection list as described in ["Zoning views"](#) on page 254.
3. Select the **QuickLoop** tab.
4. Click **Create**.
The Create New QuickLoop dialog box opens.
5. Enter a name for the new QuickLoop.
6. Click **OK**.
7. Select an element in the Member Selection List that you want to include in your QuickLoop.
The **Add Member** button becomes active.



NOTE: There is a limit of two members per QuickLoop. Only switches capable of running QuickLoop are displayed in the Member Selection List.

8. Click **Add Member** to add QuickLoop members.
Selected members are moved to the QuickLoop Members area.
9. Repeat [step 7](#) and [step 8](#) to add more elements to your QuickLoop.

Adding and removing members of a QuickLoop

Use the following procedure to add or remove members of a QuickLoop:

1. Launch the Zone Administration module as described in ["Launching the Zone Admin module"](#) on page 252.
2. Select the **QuickLoop** tab.
3. Select the QuickLoop you want to modify from the Name menu.
4. Select an element in the Member Selection List that you want to include in your QuickLoop or click an element in the QuickLoop Members that you want to delete.



NOTE: There is a limit of two members per QuickLoop. Only switches capable of running QuickLoop are displayed in the Member Selection List.

5. Click **Add Member** to add a QuickLoop member. Click **Remove Member** to remove a QuickLoop member.

Renaming a QuickLoop

Use the following procedure to change the name of a QuickLoop:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **QuickLoop** tab.
3. Select the QuickLoop you want to delete from the Name menu.
4. Click **Rename**.

The Rename a QuickLoop dialog box opens.

5. Enter a new QuickLoop name and click **OK**.

The QuickLoop is renamed in the Zone Admin buffer.

Deleting a QuickLoop

Use the following procedure to delete a QuickLoop:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **QuickLoop** tab.
3. Select the QuickLoop you want to delete from the Name menu.
4. Click **Delete**.

The **Confirm** Deleting QuickLoop dialog box opens.

5. Click **Yes**.

The selected QuickLoop is deleted from the Zone Admin buffer.

Managing fabric assist zones

A Fabric Assist (FA) zone allows private hosts to communicate with public or private targets across the fabric.

Consult the following subsections for procedures about FA zones:

- "[Creating a fabric assist zone](#)" next
- "[Adding and removing fabric assist zone members](#)" on page 261
- "[Renaming a fabric assist zone](#)" on page 261
- "[Deleting a fabric assist zone](#)" on page 261

Creating a fabric assist zone

Use the following procedure to create a Fabric Assist zone. For this example, the Mixed Zone level is used:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select **View > Mixed Zoning**. You can select any view except for the AL_PA View.

The Mixed View tab opens.

3. Select the **Fabric Assist** tab.

4. Click **Create**.

The Create New FA dialog box opens.

5. Enter a name for the new Fabric Assist zone and click **OK**.

A fabric host is required.

6. Select the desired Fabric Assist zone members from the Member Selection List.

7. Click **Add Member**.

The new members appear in the Fabric Assist Members area. The newly created Fabric Assist zone also displays in the Config tab.

Adding and removing fabric assist zone members

Use the following procedure to add and remove Fabric Assist zone members:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **Fabric Assist** tab.
3. Select the Fabric Assist zone you want to modify from the Name menu.
4. Select element in the Member Selection List that you want to include in your Fabric Assist zone or click an element in the Fabric Assist Zone Members that you want to delete.
5. Click **Add Member** to add a Fabric Assist zone member. Click **Remove Member** to remove an Fabric Assist zone member.

Renaming a fabric assist zone

Use the following procedure to change the name of a Fabric Assist zone:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **Fabric Assist** tab.
3. Select the Fabric Assist Zone you want to rename from the Name menu.
4. Click **Rename**.

The Rename a Fabric Assist Zone dialog box opens.

5. Enter a new Fabric Assist zone name and click **OK**.

The Fabric Assist zone is renamed in the Zone Admin buffer.

Deleting a fabric assist zone

Use the following procedure to delete a Fabric Assist zone:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **Fabric Assist Zone** tab.
3. Select on the Fabric Assist zone you want to delete from the Name menu.
4. Click **Delete**.

The Confirm Deleting Fabric Assist Zone dialog box opens.

5. Click **Yes**.

The selected Fabric Assist zone is deleted from the Zone Admin buffer.

Managing zone configurations

A configuration is a group of zones; zoning is enabled on a fabric by enabling a specific configuration. You can specify members of a configuration using the following methods:

- Zone names
- QuickLoop names
- FA (Fabric Assist) zone names

Table 65 shows a sample zoning database and the relationship between the zone aliases, zones, and zoning configuration. The database contains one zoning configuration, myconfig, which contains two zones: zone1 and zone2. The database also contains four aliases, which are members of zone1 and zone2. Zone1 and zone2 also have additional members other than the aliases.

Table 65 Sample zoning database

Alias	Zone	Config
alias1 = WWN1; WWN2; WWN3		
alias2 = WWN4; <domain, portarea>		
alias3 = WWN5; <AL_PA>	zone1 = alias1; alias2; WWN8; <domain, portarea>; <ALPA>	
alias4 = WWN5; WWN6; WWN7	zone2 = alias3, alias4, WWN9	myconfig = zone1, zone2

Consult the following subsections for procedures about managing zoning configuration:

- ["Creating a zone configuration"](#) on page 263
- ["Adding or removing zone configuration members"](#) on page 263
- ["Renaming a zone configuration"](#) on page 264
- ["Deleting a zone configuration"](#) on page 264
- ["Enabling a zone configuration"](#) on page 264
- ["Disabling a zone configuration"](#) on page 265
- ["Displaying the enabled zone configuration"](#) on page 265
- ["Displaying the zone configuration summary"](#) on page 266
- ["Zone Configuration summary"](#) on page 267
- ["Displaying/target accessibility"](#) on page 267

Creating a zone configuration

Use the following procedure to create a zone configuration. After creating a zone configuration, you must explicitly enable it for it to take effect.

1. Launch the Zone Admin module as described in ["Launching the Zone Admin module"](#) on page 252.
2. Select a format to display zoning members in the member selection list as described in ["Zoning views"](#) on page 254.
3. Select the **Config** tab.
4. Click **Create**.
The Create New Config dialog box opens.
5. Enter a name for the new configuration and click **OK**.
The new configuration displays in the Name list.
6. Click + signs in the Member Selection List to view the nested elements.
The choices available in the Member Selection List depend on the selection made in the View menu.
7. Highlight an element in the Member Selection List that you want to include in your configuration.
The **Add Member** button becomes active.
8. Click **Add Member** to add configuration members.
Selected members are moved to the Config Members Window.
9. Repeat [step 7](#) and [step 8](#) to add more elements to your configuration.
10. Select **ACTIONS > SAVE CONFIG ONLY** to save the configuration changes.
To enable the configuration, see ["Enabling a zone configuration"](#) on page 264.



NOTE: Any changes made to the currently enabled configuration do not appear until the configuration is reenabled.

Adding or removing zone configuration members

Use the following procedure to add or remove members of a zone configuration:



NOTE: You can make changes to a configuration that is currently enabled. These changes do not appear until the configuration is reenabled.

1. Launch the Zone Admin module as described in ["Launching the Zone Admin module"](#) on page 252.
2. Select the **Config** tab.
3. Select the configuration you want to modify from the Name menu.
4. Select an element in the Member Selection List that you want to include in your configuration or select an element in the Config Members that you want to delete.
5. Click **Add Member** to add a configuration member. Click **Remove Member** to remove a configuration member.
6. Select **Actions > Save Config Only** to save the configuration changes.
To enable the configuration, see ["Enabling a zone configuration"](#) on page 264.

Renaming a zone configuration

Use the following procedure to change the name of a zone configuration:



NOTE: You cannot rename the currently enabled configuration.

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **Config** tab.
3. Select the configuration you want to rename from the **Name** menu.
4. Click **Rename**.

The Rename a Config dialog box opens.

5. Enter a new configuration name and click **OK**.
The configuration is renamed in the configuration database.
6. Select **Actions > Save Config Only** to save the configuration changes.
To enable the configuration, see "[Enabling a zone configuration](#)" on page 264.

Deleting a zone configuration

Use the following procedure to delete a zone configuration:



NOTE: You cannot rename the currently enabled configuration.

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **Config** tab.
3. Select the configuration you want to delete from the Name menu.
4. Click **Delete**.

The Confirm Deleting Config dialog box opens.

5. Click **Yes**.
The selected configuration is deleted from the configuration database.

Enabling a zone configuration

Several configurations can reside on a switch at once, and you can quickly alternate between them. For example, you might want to have one configuration enabled during the business hours and another enabled overnight. Only one zone configuration can be enabled at a time.

When you enable a configuration, keep in mind that the zone configuration is automatically saved first and then enabled, so all changes are applied to the configuration.

To enable a zone configuration:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select **Actions > Enable Config**.

The Enable Config dialog box opens.

3. Select the configuration to be enabled from the menu.

A warning displays.

4. Click **OK** to enable the selected configuration.

Disabling a zone configuration

When you disable the active configuration, the Advanced Zoning feature is disabled on the fabric, and all devices within the fabric can communicate with all other devices. This does not mean that the zoning database is deleted, however, only that there is no configuration active on the fabric.

When you disable a configuration, keep in mind that the zone configuration is automatically saved first and then disabled, so all changes are applied to the configuration.

To disable a zone configuration:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.

2. Select **Actions > Disable Zoning**.

The Disable Config warning displays.

3. Click **Yes** to save and disable the current configuration.

Displaying the enabled zone configuration

The enabled zone configuration window displays the actual content of the single zone configuration that is currently enabled on the fabric, whether or not it matches the configuration that was enabled when the current zone admin session was launched or last refreshed (see [Figure 157](#)). The zones, QuickLoops, and FA zones are displayed, and their contents (ports, WWNs, AL_PAs) are displayed next to them. Aliases are not displayed in the enabled zone configuration. If there is no active zoning configuration enabled on the switch, a message is displayed to that effect.

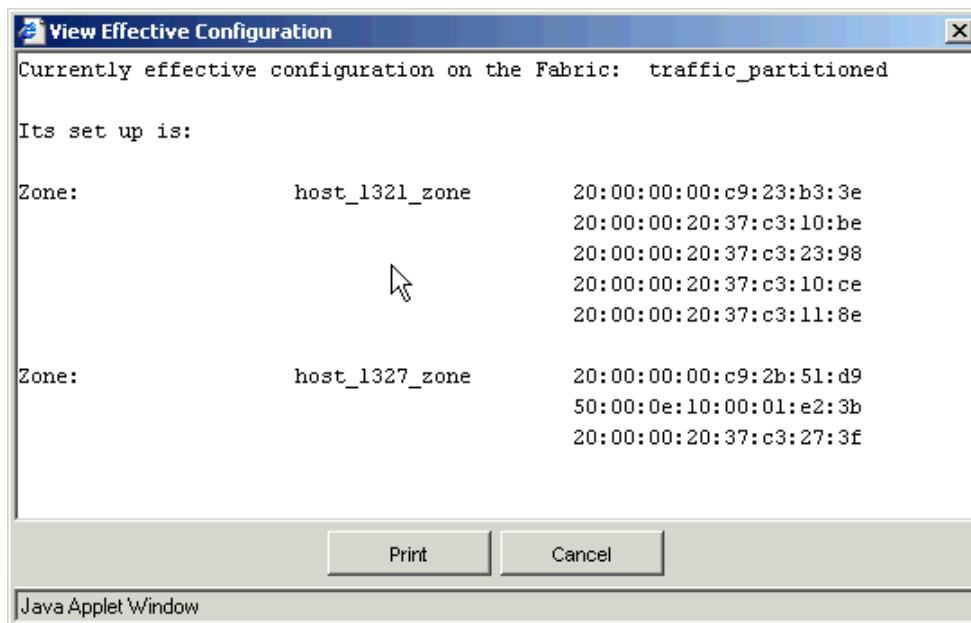


Figure 157 Effective Configuration window

The enabled configuration is listed in the top right corner of the Zone Admin window.

To view detailed information about the enabled zone configuration:

1. Launch the Zone Admin module, as described in “[Launching the Zone Admin module](#)” on page 252.

The Zone Configuration in effect at the time you launched the Zone Admin module is identified in the top right corner. This information is updated only when you manually refresh the Zone Admin module contents by clicking the refresh icon at the bottom right corner of the Zone Admin window, or when you enable a configuration through the Zone Admin module. If someone changes the effective zone configuration (outside of your Zone Admin session) after you have launched the Zone Admin module, but before you have refreshed the Zone Admin module (by clicking the refresh icon in the bottom right corner), the effective configuration displayed in the upper right corner is not updated.



CAUTION: Clicking the refresh icon in the lower left corner of the Zone Admin module overwrites all local unsaved zoning changes. If anyone has made any changes to the zones outside of your Zone Admin session, those changes are applied.

2. Use one of the following methods to identify the most recently effective zone configuration without saving or applying any changes you have made in the Zone Admin module.

- Select **File > View Effective Configuration** in the Zone Admin module.
- Select the enabled configuration icon in the Zone Admin module.

Both of these actions display the Effective Configuration window. If no zone is enabled, a message is displayed indicating that there is no active zoning configuration on the switch.

3. Optional: Click **Print** to print the enabled zone configuration details. This opens the print dialog box.

Displaying the zone configuration summary

The zone configuration summary hierarchically lists all defined zoning elements known to the current Zone Admin session, whether or not any of the listed configurations have been enabled, and whether or not any of the lower level elements have been added as members of the higher level (aliases, zones, QuickLoops, FA zones) structures. The zone configuration summary displays the entire contents of the fabric zoning database as it was at the time the Zone Admin session was launched, or the most recently saved or refreshed information, and any unsaved changes you make since the time the Zone Admin session is launched. It provides the name of the zone configuration that was enabled at the time you launched the Zone Admin session; however, keep in mind that the enabled configuration might have changed since then and that this screen does not reflect those changes.

To view a zone configuration summary report:

1. Launch the Zone Admin module as described in “[Launching the Zone Admin module](#)” on page 252.
2. Select **File > Print Summary**.

The Zone Configuration Summary window opens, as shown in [Figure 158](#).

It is important to note that the summary displays the information based on the changes just made. If current Zone Admin session changes have not yet been saved to the fabric, the information displayed here is different from what is seen from the switch.

3. Optional: Click **Print** to print the zone configuration summary. This opens the print dialog box.

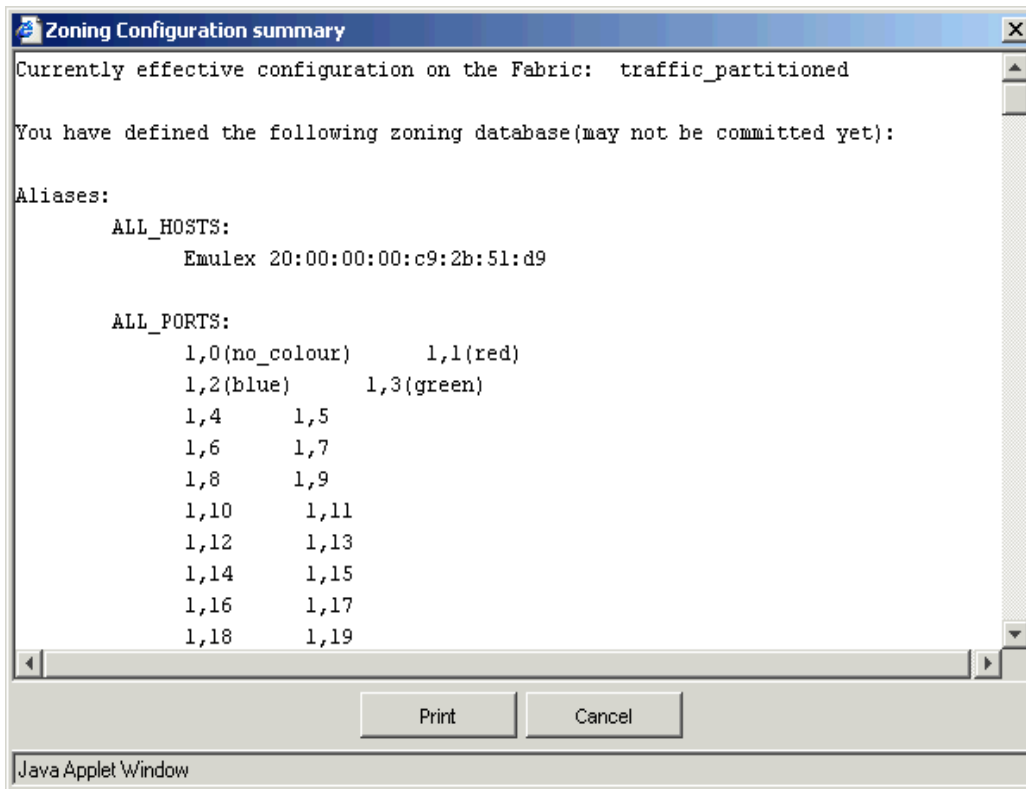


Figure 158 Zone Configuration summary

Creating a configuration analysis report

The configuration analysis report lists the following:

- SAN components (ports, WWNs, and AL_PAs) that are not included in the configuration.
- SAN components (ports, WWNs, and AL_PAs) that are contained in the configuration but not in the fabric.

To create a configuration analysis report:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select the **Config** tab.
3. Select a configuration to be analyzed from the Name menu.
4. Click **Analyze Config**.

A dialog box opens asking whether you want to refresh the fabric before running the analysis.

5. Click **Yes** or **No**.

The configuration analysis window opens.

Displaying/target accessibility

The Initiator/Target Accessibility Matrix shows a list of initiators and a list of targets and indicates which initiator-target pair can access each other.

To display an Initiator/Target Accessibility Matrix:

1. Launch the Zone Admin module as described in "Launching the Zone Admin module" on page 252.
2. Select the **Config** tab.
3. Select a configuration to be analyzed for device accessibility from the Name menu.
4. Click **Device Accessibility**.

The Initiator/Target Accessibility Matrix for Config- Device Selection dialog box opens (see Figure 159).

5. Select devices you want displayed in the accessibility matrix; you can select the radio button for all devices in the fabric or a subset of the devices.

If you select a subset, you must select the devices from the Select Devices list and click **Add** to move them to the Evaluate for Accessibility list.

6. Click **OK**.

The Initiator/Target Accessibility Matrix is displayed. You can mouse over a target to display the symbolic name of the device. You can click WWN to launch the device view for that device. In addition, you can right-click the device nodes and click View Device Detail to display detailed information about the selected device.

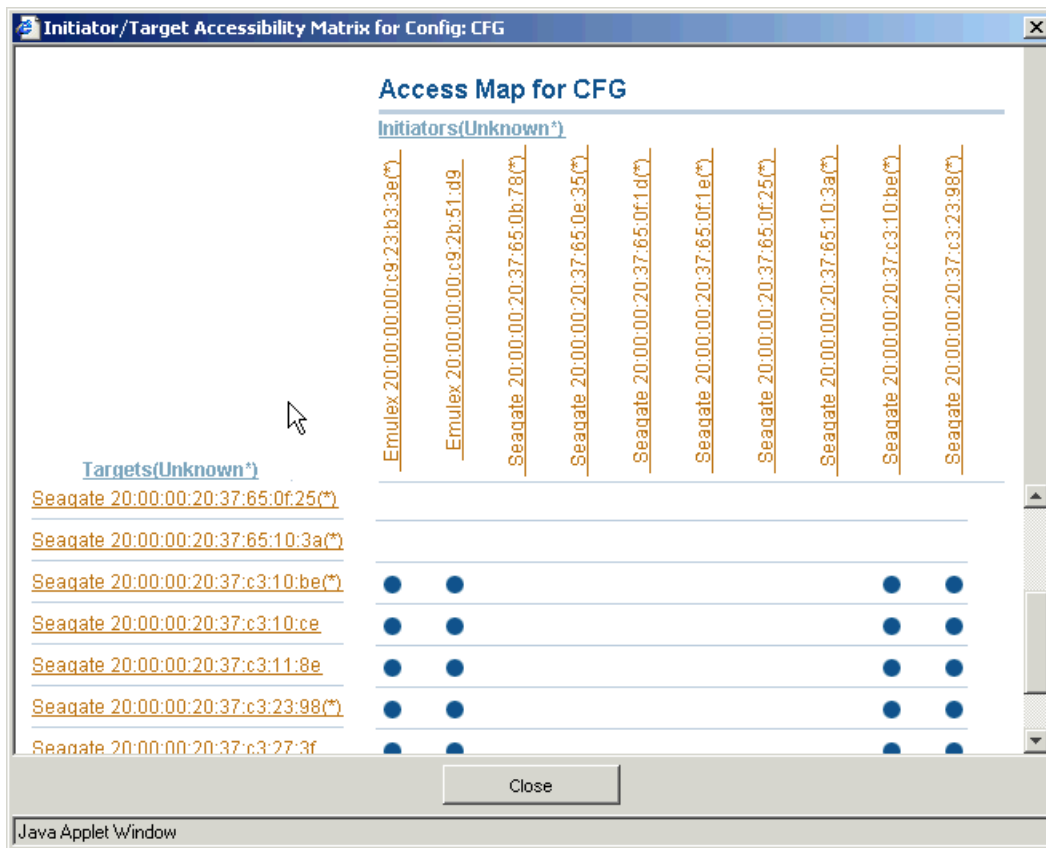


Figure 159 Initiator/Target Accessibility Matrix

Managing the zone database

This section contains the following procedures for managing the zone database:

- ["Adding a WWN to multiple aliases, zones, and FA zones"](#) on page 269
- ["Removing a WWN from multiple aliases, zones, and FA zones"](#) on page 269
- ["Replacing a WWN in multiple aliases, FA zones, and zones"](#) on page 270
- ["Searching for a zone member"](#) on page 270
- ["Clearing the zoning database"](#) on page 271
- ["Adding un-zoned online devices to a zone or alias"](#) on page 272
- ["Removing offline devices from the zoning database"](#) on page 272
- ["Replacing offline devices"](#) on page 273
- ["Defining device aliases"](#) on page 273

Adding a WWN to multiple aliases, zones, and FA zones

This procedure enables you to configure a WWN as a member in a Zone Configuration before adding that device to the fabric. Specifically, it is useful if you want to add a WWN to all or most zoning entities. The added WWN does not need to currently exist in the fabric.

To add a WWN to the Zone Admin buffer:

1. Launch the Zone Admin module as described in ["Launching the Zone Admin module"](#) on page 252.
2. Select **Edit > Add WWN**.
The Add WWN dialog box opens.
3. Enter a WWN value in the WWN field.
4. Click **OK**.

The Add WWN dialog box opens all the zoning elements that include the new WWN, including aliases, zones, and FA zones. All of the elements are selected by default.

5. Click items in the list to select or unselect and then click **Add** to add the new WWN to all the selected zoning elements.

The WWN is added to the Zone Admin buffer and can be used as a member.

Removing a WWN from multiple aliases, zones, and FA zones

This procedure is useful if you want to remove a WWN from all or most zoning entities.

To delete a WWN from the Zone Admin buffer:

1. Launch the Zone Admin module as described in ["Launching the Zone Admin module"](#) on page 252.
2. Select **Edit > Delete WWN**.
The Delete WWN dialog box opens.
3. Enter a WWN value in the WWN field.
4. Click **OK**.

The Delete WWN dialog box opens all the zoning elements that include the WWN.

5. Click items in the list to select or unselect and then click **Delete** to delete the WWN from all the selected zoning elements.

The WWN is deleted from the selected items in the Zone Admin buffer.

Replacing a WWN in multiple aliases, FA zones, and zones

This procedure enables you to replace a WWN throughout the Zone Admin buffer. The procedure is helpful when exchanging devices in your fabric and helps you to easily maintain your current configuration.

To replace a WWN in the Zone Admin buffer:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select **Edit > Replace WWN**.

The Replace WWN dialog box opens.

3. Enter the WWN to be replaced in the Replace field.
4. Enter the new WWN in the By field.
5. Click **OK**.

The Replace WWN dialog box opens. It lists all the zoning elements that include the WWN.

6. Click an item in the list to select or unselect and then click **Replace** to replace the WWN in all the selected zoning elements.

The old WWN is replaced in the Zone Admin buffer by the new WWN, including within any alias or zone in which the old WWN was a member.

Searching for a zone member

You can search zone member selection lists for specified strings of text. If you know some identifying information about a possible member of a zoning entity, you can select the tab and view for that entity and then search through its member selection list using the Search for Zone Member option. If the target entity is an alias, zone, QuickLoop, or FA zone, the search domain includes elements like switch names and domain numbers, port names and domain-port addresses, device WWNs and manufacturer names, as well as any aliases that might already have been defined. If the target entity is a configuration, then zones, FA zones, and QuickLoops are also included along with the elements they contain.

The search starts from the top of the list and when the target element is found, it is also selected in the member selection list so it can be added or its parent or children can be easily found. By default, the member selection list is searched from beginning to end one time. If you select the wrap around option, the search continues to loop from the beginning to the end of the member selection list.

To search for a zone member:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select **Edit > Search Member**.
3. Enter the zone member name in the Member Name field.

Optional: Narrow the search by checking one or more of the check boxes, such as **Match Case**.

4. Click **Next** to begin the zone member search.

Clearing the zoning database

Use the following procedure to disable the active zoning configuration, if one exists, and delete the entire zoning database:



CAUTION: This action not only disables zoning on the fabric, but also deletes the entire zoning database. This results in all devices being able to communicate with each other.

1. Launch the Zone Admin module as described in ["Launching the Zone Admin module"](#) on page 252.
2. Select **Actions > Clear All**.

The Disable Config warning displays.

3. Click **Yes** to do all of the following:
 - Disable the current configuration
 - Clear the entire contents of the current Web Tools Zone Admin buffer
 - Delete the entire persistent contents of the fabric zoning database.

This action is not recoverable.

Using zoning wizards

The Zone Admin module contains the following wizards to help you perform some zoning tasks easily:

- Add Un-zoned Devices
- Remove Offline Devices
- Replace Offline Devices
- Define Device Alias

The wizards are accessed through the Tools menu in the Zone Admin module. The following sections describe the tasks and the procedure for accessing the wizards for each task. The wizards are self-explanatory, so specific steps are not documented here.

Note that the left side of each wizard window lists the steps you need to take to complete the task. The current step is in blue, as shown in [Figure 160](#). Some of the wizards allow you to loop and repeat the task multiple times. Each step is listed in this panel so you can see the steps that you still need to perform,

as well as the steps that you have already performed. Note that the step numbers do not necessarily match the overall numbering in this panel.

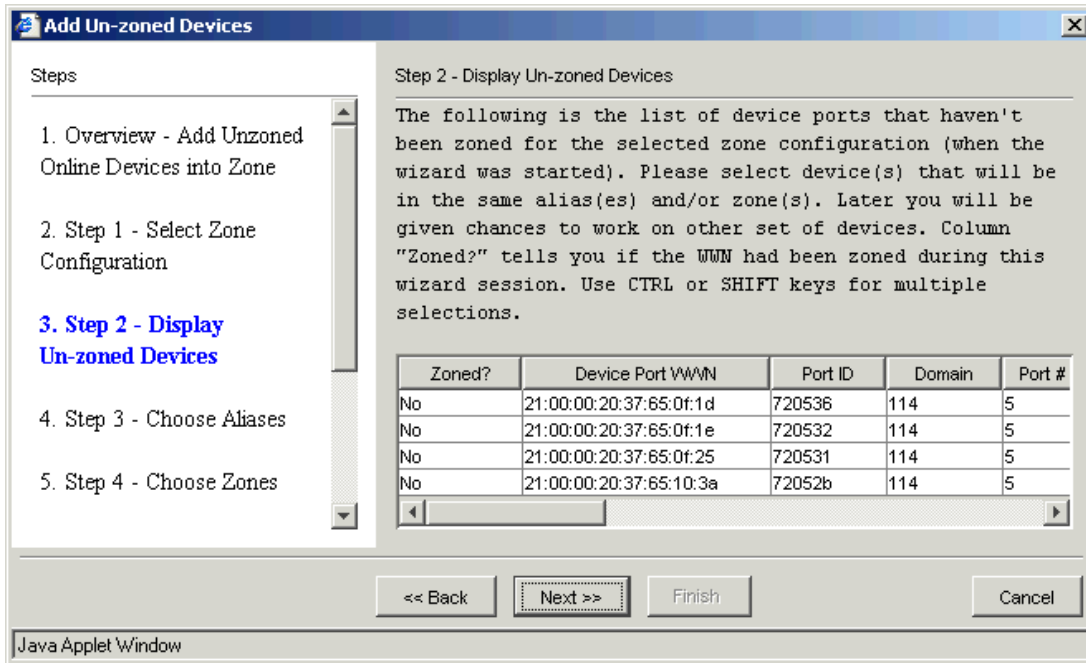


Figure 160 Add Un-zoned Devices wizard

Adding un-zoned online devices to a zone or alias

When zoning is enabled, devices that are not included in a zone configuration are inaccessible to other devices in the fabric. Use the following procedure to identify online devices that are not zoned in any zone configuration and add them to a zone or alias:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select **Tools > Add Un-zoned Devices**.

The Add Un-zoned Devices wizard starts.

3. Follow the steps outlined in the wizard.

The wizard displays unzoned devices and prompts you to select them and add them to an alias or a zone.

When you have finished the steps for adding a device to a zone or alias, if there are any more unzoned devices, you can either continue to add those unzoned devices or exit the wizard. If there are no more unzoned devices, you must exit the wizard.

Removing offline devices from the zoning database

Removing offline or dead devices (WWNs) helps clean the zoning database to save more space for new entries. Use the following procedure to view all devices that are no longer online and remove all or selected offline devices from the zoning database:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.
2. Select **Tools > Remove Offline Devices**.

The Remove Offline Devices wizard starts.

3. Follow the steps outlined in the wizard.

The wizard allows you to view all devices that are no longer online and remove all or selected offline devices from the zoning database.

Replacing offline devices

Replacing an offline device replaces its WWN with a new given WWN in all of its containing aliases and zones. Use the following procedure to view offline devices and replace them with new ones in the zoning database:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.

2. Select **Tools > Replace Offline Devices**.

The Replace Offline Devices wizard starts.

3. Follow the steps outlined in the wizard.

The wizard allows you to view all devices that are no longer online and replace all or selected offline devices with new ones (WWNs) in the zoning database.

Defining device aliases

Use the following procedure to define zone alias names for devices in a single process. This procedure is especially useful if you use one unique zoning alias to name each device port.

The alias definitions of the devices are saved in the zoning database on the switch, which has a size limit. If database size becomes a concern, reconsider your alias definitions.

To assign aliases to devices:

1. Launch the Zone Admin module as described in "[Launching the Zone Admin module](#)" on page 252.

2. Select **Tools > Remove Offline Devices**.

The Define Device Alias wizard starts.

3. Follow the steps outlined in the wizard.

The wizard allows you to define one and only one name for each device port (WWN). Devices with one or more aliases are considered already named and are not displayed.



NOTE: To enter a zone alias name, click the Zone Alias field for each device, as shown in [Figure 161](#) and then type the name. A cursor does not appear.

After typing each alias name, you must press Enter or click another zone alias field, or the wizard does not accept the name.

Define Device Alias

Steps

- 8. Step 2 - Define Device Alias Prefix
- 9. Step 3 - Enter Zone Alias For Device Ports**
- 10. Step 4 - Summary & Confirmation
- 11. Step 5 - Save Changes to Web Tools Local Database

Step 3 - Enter Zone Alias For Device Ports

The following table shows the on-line devices that you've selected for a name. Please enter the new name in "Zone Alias" column, for each port WWN.

Device Port WWN	Zone Alias	Port ID	Domain
21:00:00:20:37:65:0f:25		720531	114
21:00:00:20:37:65:0f:1e		720532	114
21:00:00:20:37:65:0f:1d		720536	114
21:00:00:20:37:65:0e:35		72052c	114

<< Back Next >> Finish Cancel

Java Applet Window

Figure 161 Entering a zone alias

16 Security administration

You can create a secure fabric using Fabric Manager. You cannot enable secure mode on a fabric unless all switches in the fabric have a Secure Fabric OS license, a zoning license, and security certificates installed. For more information about security certificates, refer to the *HP StorageWorks Secure Fabric OS user guide*.

This chapter provides information on enabling secure mode for a fabric, adding a switch to a secure fabric, and merging secure fabrics. It also includes information about using the policy editor to configure security policies, and provides instructions on how to configure no node WWN zoning, how to change admin security passwords (for FCS or non-FCS switches and directors), and how to use telnet on a secure fabric. Consult the following sections for specific secure fabric information:

- [Enabling secure mode for a fabric](#), page 275
- [Using the policy editor](#), page 285
- [Adding a switch to a secure fabric](#), page 298
- [Merging secure fabrics](#), page 298
- [Using telnet on a Secure Fabric](#), page 303

Enabling secure mode for a fabric

This section describes how to create a secure fabric using the Secure Fabric wizard. If your Primary FCS switch is not running either Fabric OS v4.4.0 or later or Fabric OS v3.2x or later, you cannot use the Secure Fabric wizard. Also, all the other switches in the fabric must be running Fabric OS v4.1x or later, Fabric OS V3.1x or later, or Fabric OS v2.6.1x or later. If the Primary FCS switch and the remaining switches in your fabric do not meet this criteria, you must enable or disable secure mode using the CLI. Refer to the *HP StorageWorks Secure Fabric OS user guide* for CLI information.

You cannot enable secure mode on a fabric unless all switches in the fabric have a Secure Fabric OS license, zoning license, and security certificates installed. For more information about certificates, refer to the *HP StorageWorks Secure Fabric OS user guide*.

To launch the Secure Fabric wizard to create a secure fabric:

1. Select the fabric you want to enable secure mode on from within the SAN Elements tab.
2. Select **Actions > Security > Enable Secure Mode**.

The Enable Secure Mode for Fabric wizard opens (see [Figure 162](#)).



NOTE: In some Fabric Manager screens the MP Router may be referred to as an FC Router.

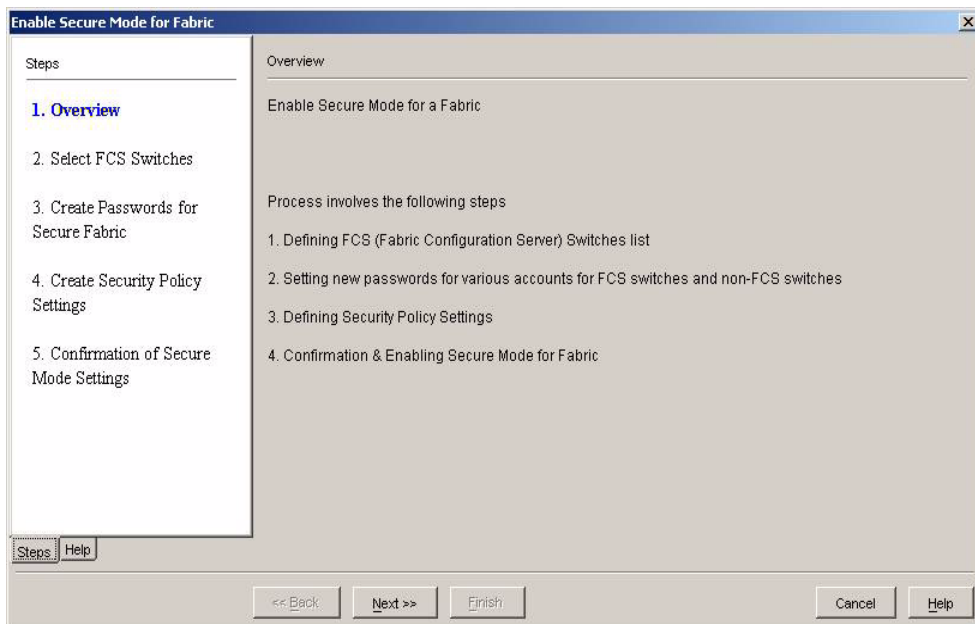


Figure 162 Enable secure mode for fabric wizard

3. Click **Next.**

A list of all the available switches and FCS switches appears (see [Figure 163](#)).

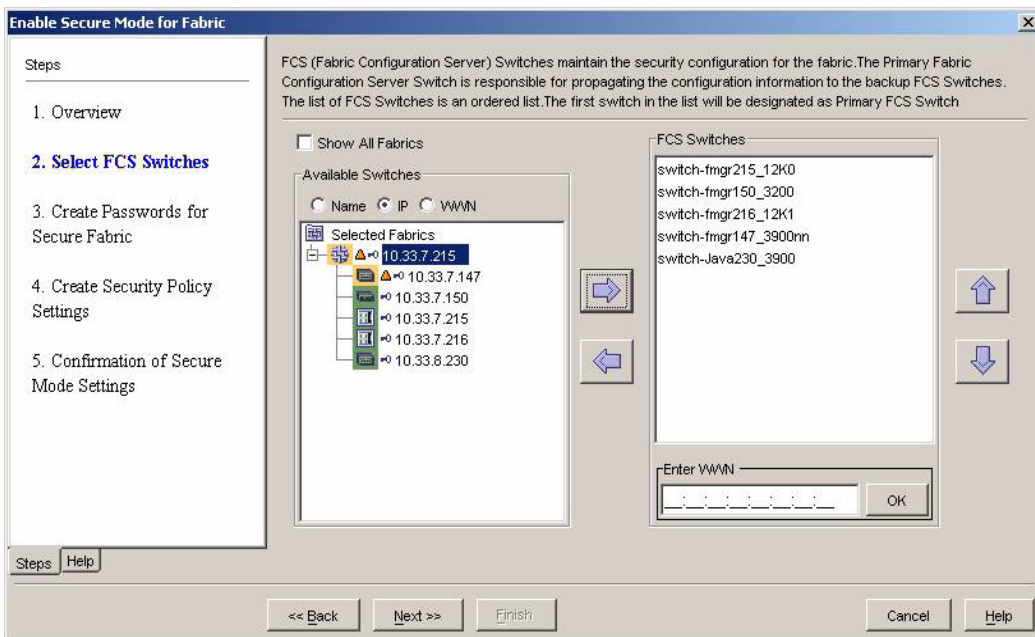


Figure 163 Select FCS switches

4. Select the switches you want to be FCS switches from the Available Switches list.

If the switches you want to select remain undiscovered, enter the switch WWN in the Enter WWN field under the FCS Switches list and click **OK**. The switch is then added to the FCS Switches list.

5. Click the right arrow to move the switches you want in your secure fabric from the Available Switches list to the FCS Switches list.

The FCS Switches list is populated with the switches you selected. The first switch listed in the FCS Switches list is the Primary FCS switch.

6. Optional: Arrange the FCS Switches list order by using the up/down arrow buttons.
7. After the FCS Switches list is arranged in the order you want, click **Next**.

The Create Passwords for Secure Fabric window opens (see [Figure 164](#)).

Figure 164 Secure fabric passwords

8. Select one of the following options to set up your passwords:
 - Click **Keep Current Passwords** to keep all of your current passwords (not recommended).
 - Click **Use Same Passwords for all Accounts** to use a single password (not recommended).
 - Enter new passwords for all user accounts and access levels.

Passwords must be between 8 and 40 characters in length, and must differ from the current passwords by at least one character.

9. Click **Next**.

10. Optional: You can create a set of policies as part of enabling secure mode (see [Figure 165](#)).



CAUTION: If you create policies without Fabric Manager client/server IP addresses, or if you create empty Serial, telnet, HTTP, and API policies simultaneously, you will suddenly be unable to manage security and the switch.

Enable Secure Mode for Fabric

Steps

1. Overview
2. Select FCS Switches
3. Create Passwords for Secure Fabric
- 4. Create Security Policy Settings**
5. Confirmation of Secure Mode Settings

Security Policies control which Devices and Switches have access to the secure fabric. For each policy you can define different access levels for Devices and Switches. Please select the security level for policy creation. To create custom policies, select the Custom radio button. Click the Preview button to preview the policies that will be created for a selected security level.

Select Security Policy Settings

Security Level ☐ High ☐ Medium ☒ Low ☐ Custom

Policy Name	Allow All	Current Fabric/FM	Allow None	User Defined
SCC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DCC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
API	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HTTP	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Telnet	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WSNMP	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RSNMP	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SES	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management Server	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Serial Port	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Front Panel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Allow All : Any switch or device is allowed to connect in the fabric
Current Fabric/FM : Fabric is locked down with only current switches/devices/FM allowed to connect
Custom : User defined policy set

Steps Help

Figure 165 Select security policy settings

The set of security policies is divided into four security levels: High, Medium, Low, and Custom. When you select the security level radio buttons, the predefined policy settings are displayed in the table. You can change those settings by clicking in the check boxes for the policy and corresponding setting level (Allow All, Current Fabric/FM, Allow None, and User-defined). [Table 66](#) on page 283 displays the policies that are created and the access provided for each security level.



NOTE: FCS and SCC policies are created by default even if you do not create a set of policies. The Low security level is applied to the switch by default.

11. Click **Preview** to see exactly what policies are generated with the selected configurations. A new window is opened, displaying the policy settings that each security level generates (see [Figure 166](#)).

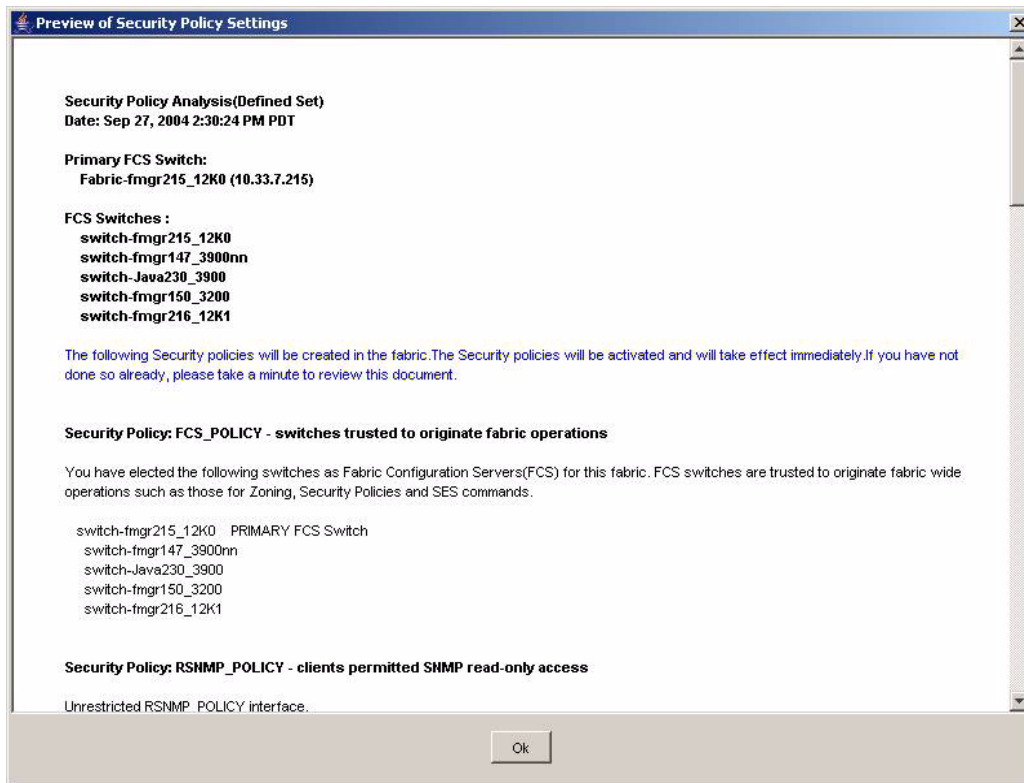


Figure 166 Preview of security policy settings



NOTE: Devices not in the DCC Policy, segment out when secure policies are activated.

12. Click **OK** to return to the Select Secure Policies window (Figure 165 on page 278).
13. Click **Next** if you are finished enabling secure mode (see Figure 172 on page 282 and skip to step 22), or click the **Custom** button if you want to customize the security level settings.
14. After clicking the **Custom** button, check the check box in the User Defined column that corresponds to the policy for which you want customized settings: for example, DCC and telnet (see Figure 167).

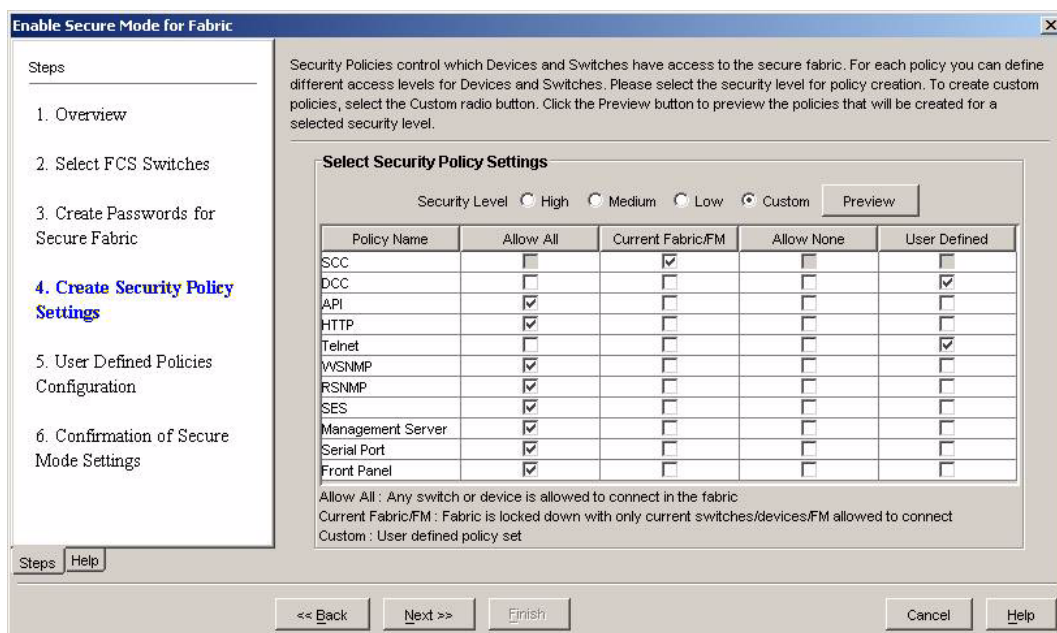


Figure 167 Customized security level settings

15. Click **Next**.

The User Defined Policies Configuration window opens (see [Figure 168](#)). The User Defined Policies Configuration window includes tabs that correspond to the policies selected for customization: for example, DCC and IP Policies (IP policies include telnet, HTTP, API, WSNMP, RSNMP, and IP).

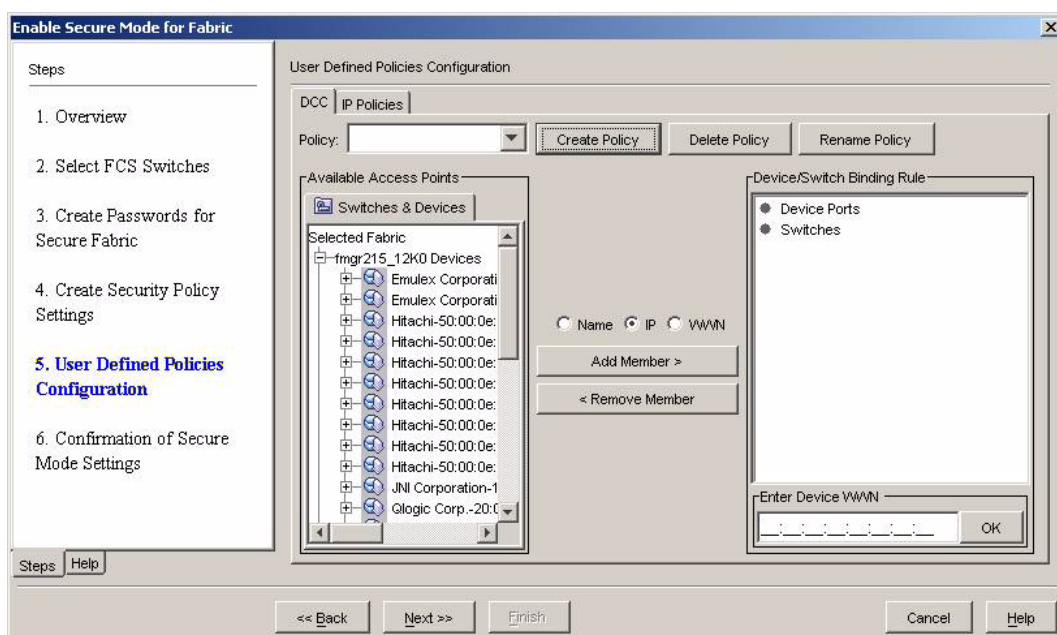


Figure 168 User-defined policies configuration

16. Select the switches and devices you want covered by the DCC policy and move them (use the **Add Member** button) to the Device/Switch Binding Rule window.

If the device you want to select is not listed, enter the device WWN in the Enter Device WWN field under the Device/Switch Binding Rule window and click **OK**. The device is added.

17. Provide a unique policy name.

You can create multiple DCC policies, but each policy name should be unique.

18. Click **Create Policy**.

You can also delete or rename existing policies using the **Delete Policy** or **Rename Policy** buttons (see Figure 169).

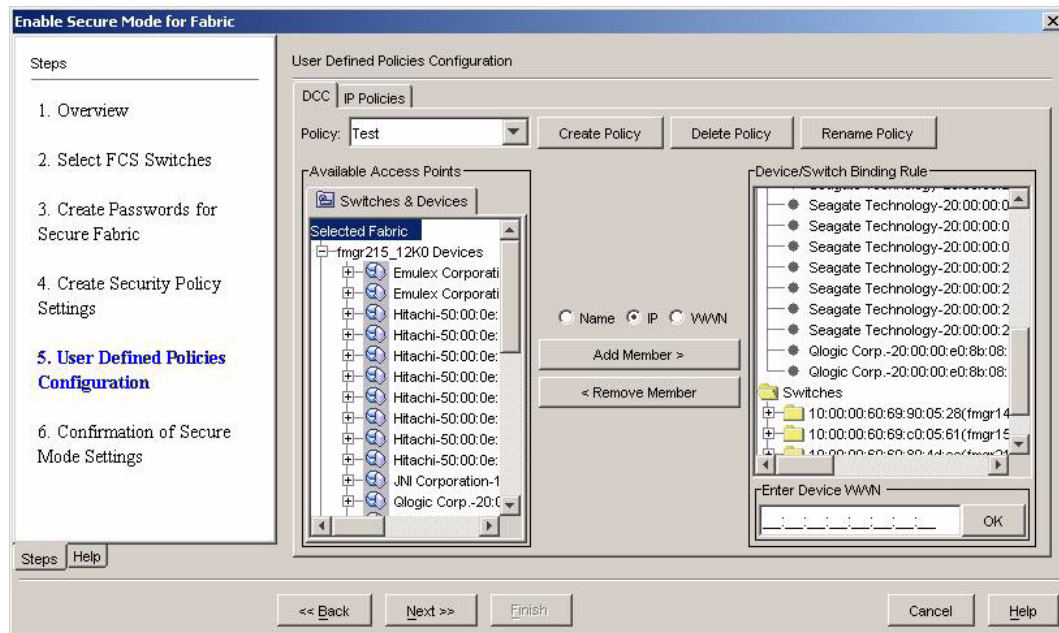


Figure 169 DCC policy created

19. Select the **IP Policies** tab.

All IP-based policies (telnet, API, HTTP, WSNMP, RSNMP, and IP) are displayed with this tab (see Figure 170).

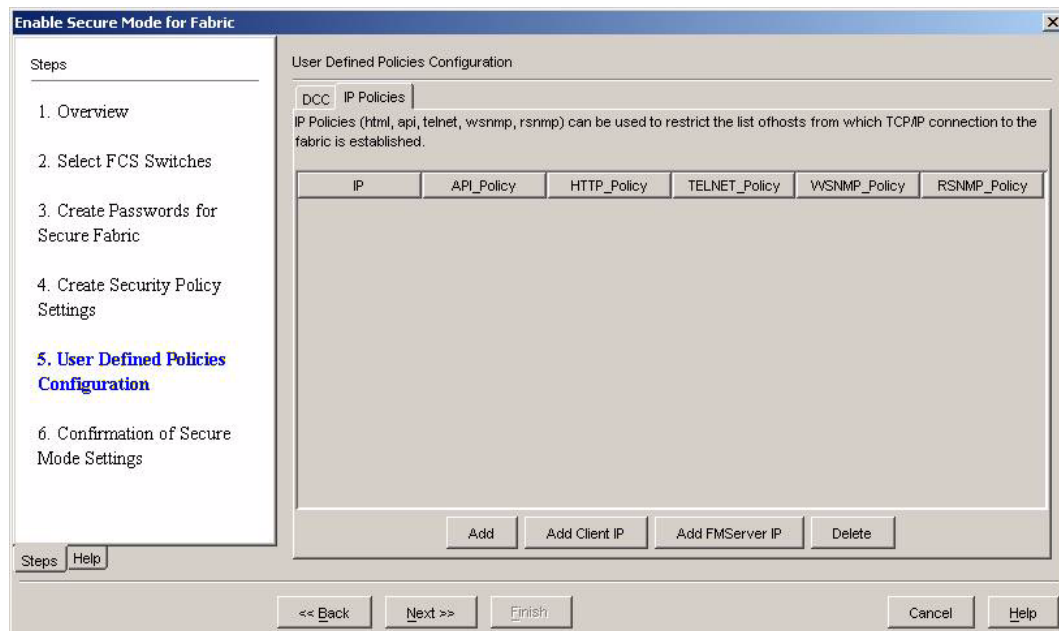


Figure 170 User-defined IP policies configuration

20. Add the host IP addresses you want in the telnet policy:

- Click **Add** to add host IP addresses
- Click **Add Client IP** to add hosts that are running the Fabric Manager client.
- Click **Add FM Server IP** to add hosts that are running the Fabric Manager server.

Only the hosts that are added to the IP-base policy are able to act on the switches: for example, open telnet sessions to the switches (see [Figure 171](#)).

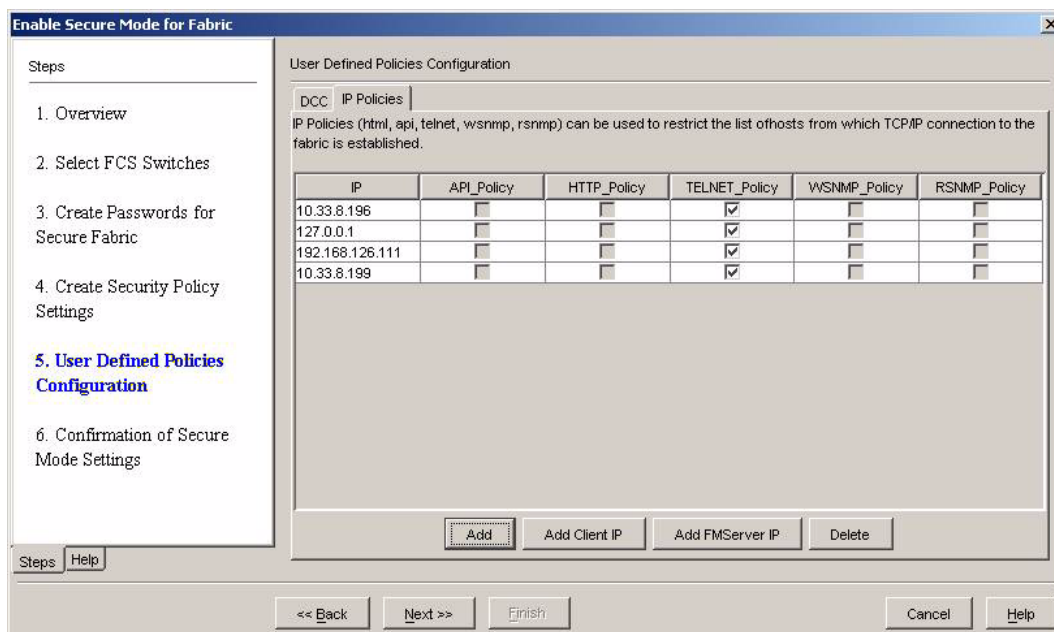


Figure 171 User-defined telnet policy

21. Click **Next** if you are finished enabling secure mode.

The Confirmation of Secure Mode Settings window opens (see [Figure 172](#)).

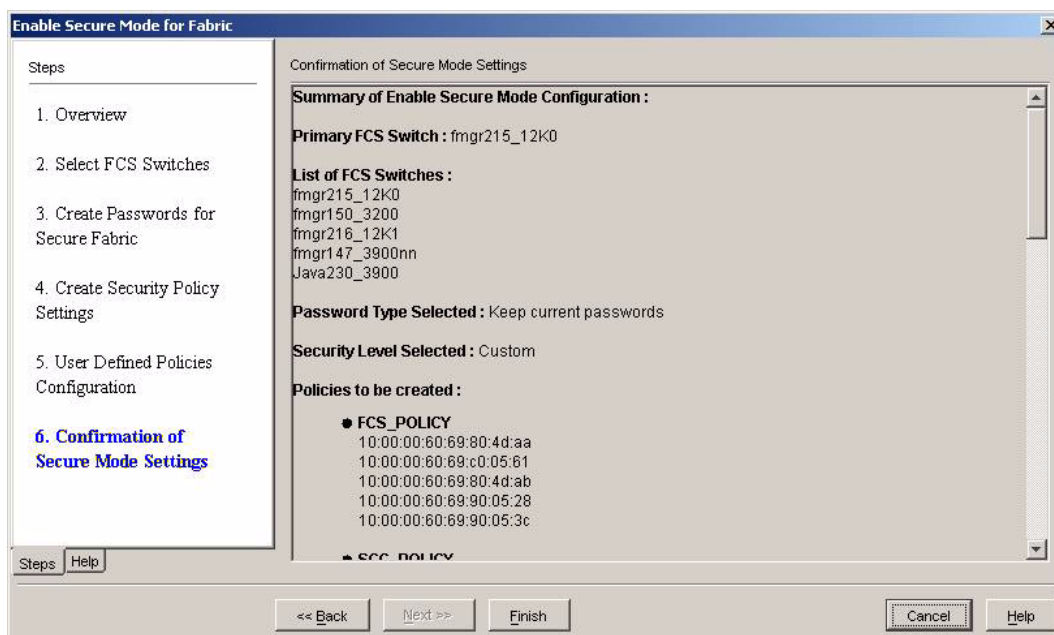


Figure 172 Confirmation of secure mode settings

22. Review the news settings; then click **Finish** to exit the Enable Secure Mode for Fabric wizard.

Table 66 Security level settings (high, medium, low) per policy

Policy level	Policy name	Policy exists	Description
High	SCC	Yes	Policy is created only with the current switches in the fabric.
	DCC	Yes	Policy is created only with the currently connected/online devices in fabric.
	API ¹	Yes	Policy is created with the Fabric Manager server and all client IP addresses.
	HTTP ¹	Yes	Policy is created with the Fabric Manager server and all client IP addresses.
	Telnet ¹	Yes	Policy is created with the Fabric Manager server and all client IP addresses.
	SNMP ¹	Yes	An empty policy is created, which disables access by anyone.
	SES	Yes	An empty policy is created, which disables access by anyone.
	Management Server	Yes	An empty policy is created, which disables access by anyone.
	Serial Port	Yes	An empty policy is created, which disables access by anyone.
	Front Panel	Yes	An empty policy is created, which disables access by anyone.

Table 66 Security level settings (high, medium, low) per policy (continued)

Policy level	Policy name	Policy exists	Description
Medium	SCC	Yes	Policy is created only with the current switches in the fabric.
	DCC	Yes	Policy is created only with the currently connected/online devices in fabric.
	API ¹	Yes	Policy is created with the Fabric Manager server and all client IP addresses.
	HTTP ¹	Yes	Policy is created with the Fabric Manager server and all client IP addresses.
	Telnet ¹	Yes	Policy is created with the Fabric Manager server and all client IP addresses.
	SNMP ¹	No	No policy is created; everyone is allowed access.
	SES	No	No policy is created; everyone is allowed access.
	Management Server	No	No policy is created; everyone is allowed access.
	Serial Port	No	No policy is created; everyone is allowed access.
	Front Panel	No	No policy is created; everyone is allowed access.
Low	SCC	Yes	Policy is created only with the current switches in the fabric.
	DCC	No	No policy is created; everyone is allowed access.
	API ¹	No	No policy is created; everyone is allowed access.
	HTTP ¹	No	No policy is created; everyone is allowed access.
	Telnet ¹	No	No policy is created; everyone is allowed access.
	SNMP ¹	No	No policy is created; everyone is allowed access.
	SES	No	No policy is created; everyone is allowed access.
	Management Server	No	No policy is created; everyone is allowed access.
	Serial Port	No	No policy is created; everyone is allowed access.
	Front Panel	No	No policy is created; everyone is allowed access.
¹ API, HTTP, SNMP (RSNMP/WSNMP), and telnet policies all require an IP address of a management workstation.			

Using the policy editor

The Policy Editor allows you to view and configure your security policy settings.

To launch the Policy Editor:

1. Click a switch from the SAN Elements tab that is within the secure fabric for which you want to set policies.
2. Select **Actions > Security > Security Policy Editor**.

The Policy Editor opens (see [Figure 173](#)).

Use the Policy Editor for the following tasks:

- “[Configuring FCS policy options](#)” on page 287
- “[Configuring SCC policy options](#)” on page 288
- “[Configuring Telnet, RSNMP, WSNMP, HTTP, and API policy options](#)” on page 289
- “[Configuring SES and MS policy options](#)” on page 293
- “[Configuring serial and front panel policy options](#)” on page 295
- “[Changing the admin security password](#)” on page 296

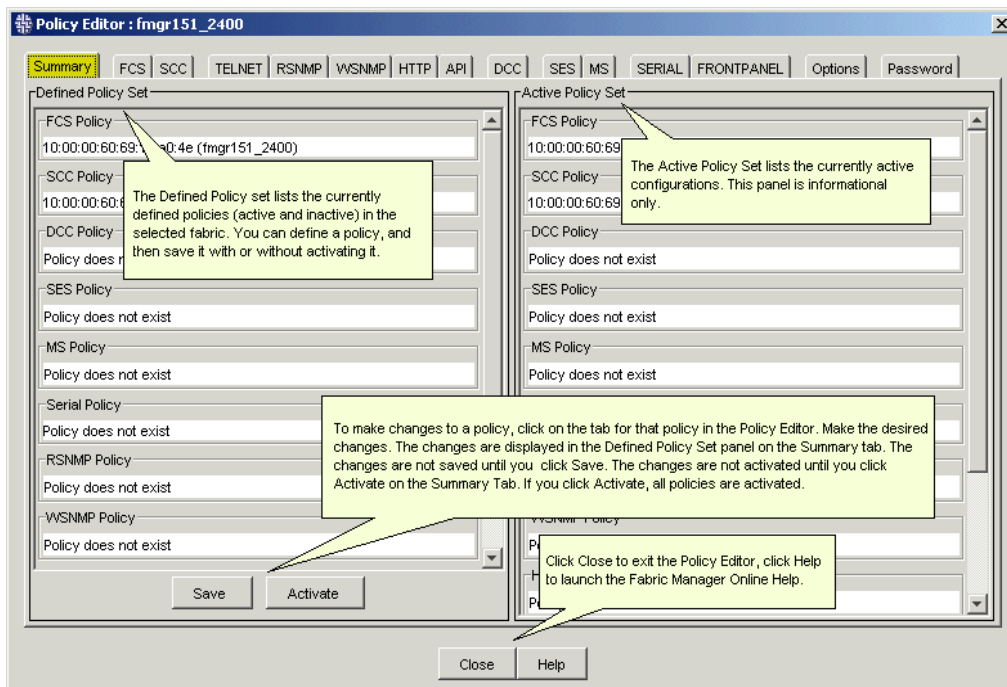


Figure 173 Policy editor (Summary tab view)

Table 67 Description of summary tab components within policy editor

Object	Description
Summary tab	Displays both the defined and active security policies.
FCS tab	Use this tab to display each switch that serves as a Fabric Configuration Server (FCS); then add or remove switches from the list. See "Configuring FCS policy options" on page 287 for additional information.
SCC tab	Use the components of this tab to create an SCC policy. See "Configuring SCC policy options" on page 288 for additional information.
TELNET tab	The components of this tab allow the host to access the fabric using the telnet protocol. See "Configuring Telnet, RSNMP, WSNMP, HTTP, and API policy options" on page 289 for additional information.
RSNMP tab	Use this tab to grant access for individual switches to run RSNMP (read-only SNMP) in a secure fabric. See "Configuring Telnet, RSNMP, WSNMP, HTTP, and API policy options" on page 289 for additional information.
WSNMP tab	Use this tab to grant access for individual switches to run WSNMP (read/write SNMP) in a secure fabric. See "Configuring Telnet, RSNMP, WSNMP, HTTP, and API policy options" on page 289 for additional information.
HTTP tab	Use this tab to provide HTTP access for a host into the fabric. See "Configuring Telnet, RSNMP, WSNMP, HTTP, and API policy options" on page 289 for additional information.
API tab	Use this tab to provide fabric access for hosts using the API. See "Configuring Telnet, RSNMP, WSNMP, HTTP, and API policy options" on page 289 for additional information.
DCC tab	Use this tab to create a security policy that binds device ports to switch ports.
SES tab	Use this tab to grant access for individual switches to run SES in a secure fabric. See "Configuring SES and MS policy options" on page 293 for additional information.
MS tab	Use this tab to grant access for individual switches to run Management Server in a secure fabric. See "Configuring SES and MS policy options" on page 293 for additional information.
SERIAL tab	Use this tab to grant access for individual switches to accept a serial connection in a secure fabric. See "Configuring serial and front panel policy options" on page 295 for additional information.
FRONTPANEL tab	Use this tab to grant access for individual switches to accept configuration changes from the front panel in a secure fabric. See "Configuring serial and front panel policy options" on page 295 for additional information.
Options tab	You can enable and disable no node WWN zoning within this tab.
Password tab	Change passwords for FCS switches and non-FCS switches from this tab.

Table 67 Description of summary tab components within policy editor (continued)

Object	Description
Save button	Saves the changes that you made to the components on any of the tab views within the Policy Editor window (but does not apply them).
Activate button	Activates any changes that you made to the components on any of the tab views within the Policy Editor window.
Close button	Closes the Policy Editor window.
Help button	Provides online help for the Policy Editor.

Configuring FCS policy options

Switches in your Fabric Configuration Server (FCS) policy serve as *trusted* switches. The first switch listed in the FCS switch list (see [Figure 174](#)) serves as the primary FCS (from which you can configure your fabric), and any subsequent switch serves as a backup FCS. The order in which switches appear in the FCS switch list represents a chain where each backup switch takes over as the primary FCS if the preceding primary FCS fails.

To configure and edit the FCS policy:

1. Select a the primary FCS switch of the secure fabric that you want to set policies on from within the SAN Elements tab.
2. Select **Actions > Security > Security Policy Editor**.

The Policy Editor opens (see [Figure 173](#) on page 285).

3. Click the **FCS** tab (see [Figure 174](#)).

All switches in the selected fabric are displayed in the Available Switch List, and the currently selected FCS switches display in the FCS Switch List.

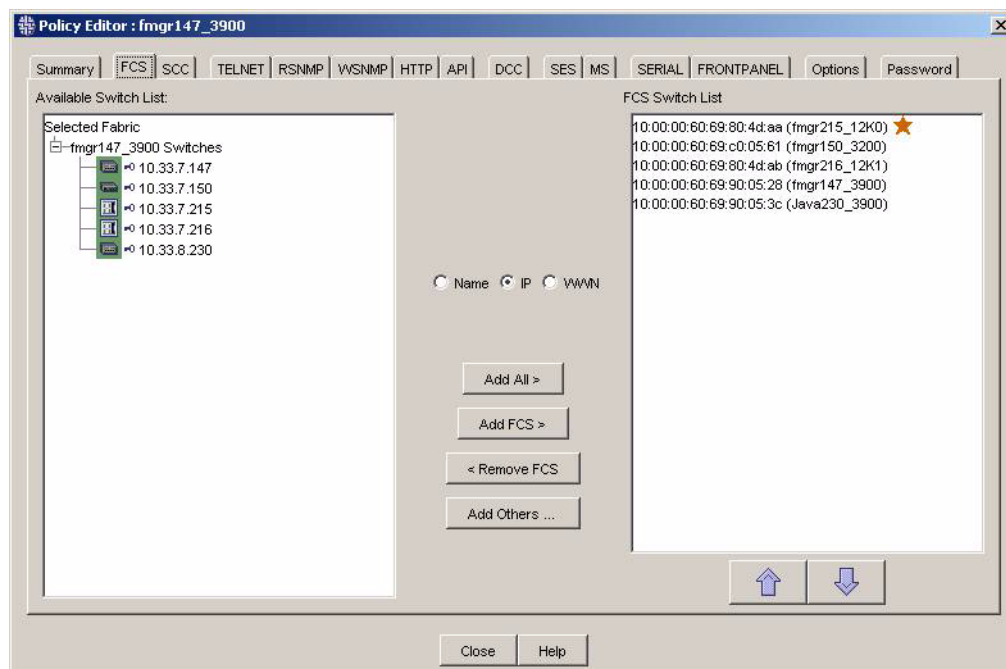


Figure 174 Configuring the FCS policy

4. Select a switch from the Available Switch List and click **Add FCS** to add the switch to the FCS Switch List, or click **Add All** to add all of the switches in the current fabric simultaneously.

To add a switch that is not listed in the Available Switch List, click **Add Others**, and type the WWN of the switch you want to add.

To remove a switch from the FCS Policy, select the switch from the FCS Switch List and then click **Remove FCS**.

The first switch listed in the FCS switch list serves as the primary FCS (from which you can configure your fabric), and any subsequent switch serves as a backup FCS. The order in which switches appear in the FCS switch list represents a chain where each backup switch takes over as the primary FCS if the preceding primary FCS fails. You can arrange the order of the switches using the up and down arrow keys. The primary FCS switch is also identified with a star icon next to it.



NOTE: Changing the primary FCS causes updates in the fabric that might take time to complete, depending on the fabric size.

5. To save your changes or activate the FCS policy with the changes, click the **Summary** tab.
6. Click **Save** (within the Summary tab) to save your changes but not apply them, or click **Activate** (within the Summary tab) to save and apply your changes.

The Security Policy Review dialog box opens.

7. After reviewing the Security Policy, click one of the following:
 - **Continue** to continue applying your changes
 - **Cancel** to cancel your changes
 - **Copy to File** to copy the Security Policy to a file

Configuring SCC policy options

The SCC policy defines all switches in the secure fabric (FCS and non-FCS). You cannot add a new switch to a secure fabric without adding the switch to the SCC policy. You cannot add a switch to the SCC policy until you create an SCC policy. SCC policies are created automatically in Fabric Manager when you enable secure mode on a fabric.

To configure and edit the SCC policy:

1. From the SAN Elements tab, select a the primary FCS switch for the secure fabric that you want to set policies on.
2. Select **Actions > Security > Security Policy Editor**.
The Policy Editor opens (see [Figure 173](#) on page 285).
3. Select the **SCC** tab (see [Figure 175](#)).
All current switches in the fabric display in the Available Switches list.

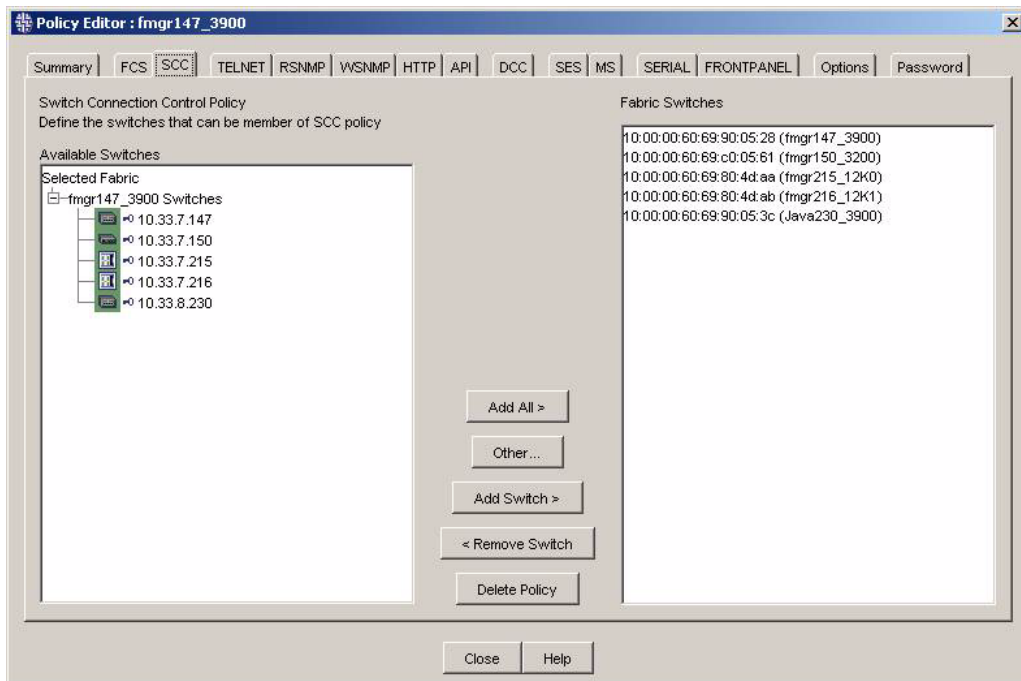


Figure 175 Configuring the SCC policy

4. Select a switch that you want to include in the SCC policy and click **Add Switch**, or click **Add All** to add all switches from the fabric into the policy.

To add a switch that is not listed in the Available Switch list, click **Other** and enter the WWN of the switch you want to add.



NOTE: All switches within a fabric must be included in the SCC policy or else the excluded switches are segmented out into their own fabrics.

To remove a switch from the SCC policy, select the switch from the Fabric Switches list and then click **Remove Switch**.

To delete the policy, click **Delete Policy**.

5. To save your changes or activate the policy with the changes, select the **Summary** tab.
6. Click **Save** from the Summary tab to save your changes but not apply them; click **Activate** within the Summary tab to save and apply your changes.

Configuring Telnet, RSNMP, WSNMP, HTTP, and API policy options

The Telnet policy contains a list of IP addresses and subnets that can establish telnet connections to any switch in the fabric. Any telnet attempts from an IP address or subnet that does not appear in the policy will fail. If you create an empty policy, you prevent all telnet access to your fabric.

Configure the RSNMP (read-only SNMP) policy to limit SNMP access to specific, trusted management stations in your environment. You cannot create an RSNMP policy without a WSNMP policy already present.

Configure the WSNMP policy (read/write SNMP policy) to limit SNMP access to specific, trusted management stations in your environment. When you add a member to the WSNMP policy, that member gains RSNMP access.

Configure the HTTP policy to grant access to IP addresses and subnets so they can establish HTTP connections to the switches in the fabric.

Create an API policy to control the workstations that can use the API to access the fabric.

To configure or edit any of these policies:

1. From the SAN Elements tab, select the primary FCS switch for the secure fabric that you want to set policies on.
2. Select **Actions > Security > Security Policy Editor**.

The Policy Editor opens (see [Figure 173](#) on page 285).

3. Select the tab that corresponds to the policy you want (Telnet, RSNMP, WSNMP, HTTP, or API).

The policy you selected appears (see [Figure 176](#)). The telnet policy is used in this example.

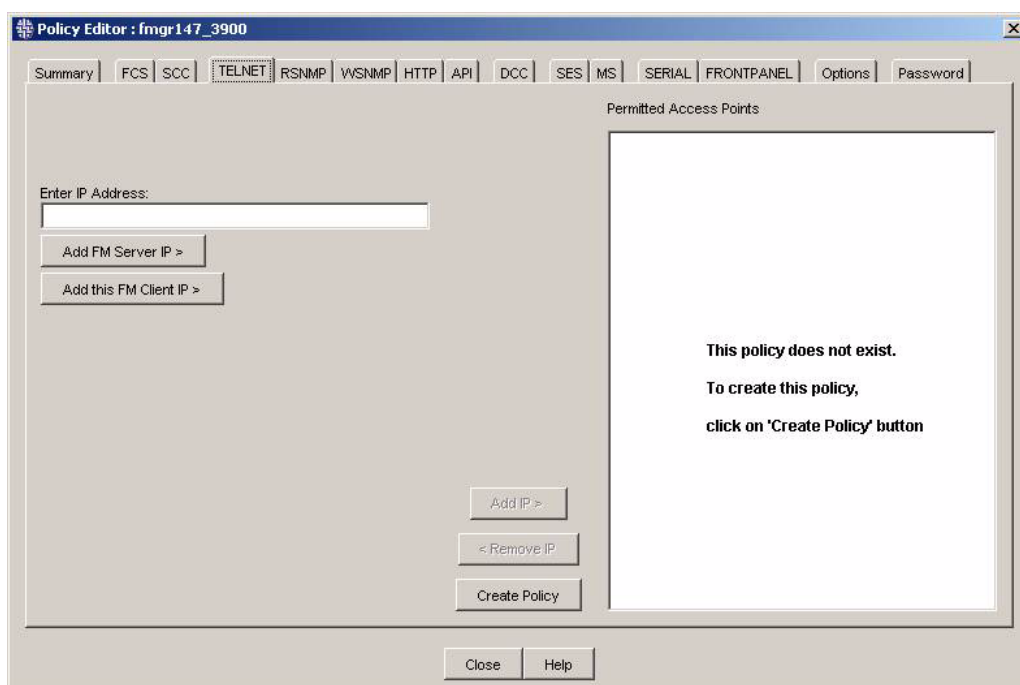


Figure 176 Configuring the telnet policy

4. Click **Create Policy**.

You have now created an empty policy, which denies the policy type (Telnet, RSNMP, WSNMP, HTTP, or API) access from all hosts to all switches in the fabric.



CAUTION: If you create policies without Fabric Manager client/server IP addresses, or if you create empty Serial, Telnet, HTTP, and API policies simultaneously, you will suddenly be unable to manage security and the switch.

If you use Fabric Manager to update the API policy to disable API access from the current host (either by creating an empty policy, or by specifically excluding this host from the API policy list), the security transaction becomes locked and it can take up to two hours before the Fabric OS releases the security transaction. You cannot modify the policies until the security transaction is released.

If you want to continue managing security and the switch, continue with the rest of the procedure.

-
5. In the Enter IP Address field, enter the IP address of a host that you want to include in the policy.



NOTE: The IP address of your Fabric Manager client must appear in the Serial, Telnet, RSNMP, WSNMP, HTTP, and API policies or you cannot access the fabric with Fabric Manager.

-
6. Optional: Click **Add FM Server IP** to add the Fabric Manager server IP address or click **Add this FM Client IP** to add the Fabric Manager client IP address.
 7. Click **Add IP**. The IP address is placed in the Permitted Access Points list.
To remove a switch from the policy, click on the IP address from the Permitted Access Points list and then click **Remove IP**.
To delete the policy, click **Delete Policy**.
 8. To save your changes or activate the policy with the changes, click the *Summary* tab.
 9. From the Summary tab, click **Save** to save your changes but not apply them; click **Activate** (within the Summary tab) to save and apply your changes.
The Security Policy Review dialog box opens.
 10. After reviewing the Security Policy, click one of the following:
 - **Continue** to continue applying your changes
 - **Cancel** to cancel your changes
 - **Copy to File** to copy the Security Policy to a file

Configuring DCC policy options

You can configure DCC policies to bind device ports to specific switch ports. With Fabric Manager, you can create and configure multiple DCC policies with unique names and populate DCC policies with switch and device WWNs.

To create a DCC policy:

1. From the SAN Elements tab, select a the primary FCS switch for the secure fabric that you want to set policies on.
2. Select **Actions > Security > Security Policy Editor**.

The Policy Editor opens (see [Figure 173](#) on page 285).

3. Click the **DCC** tab (see Figure 177).

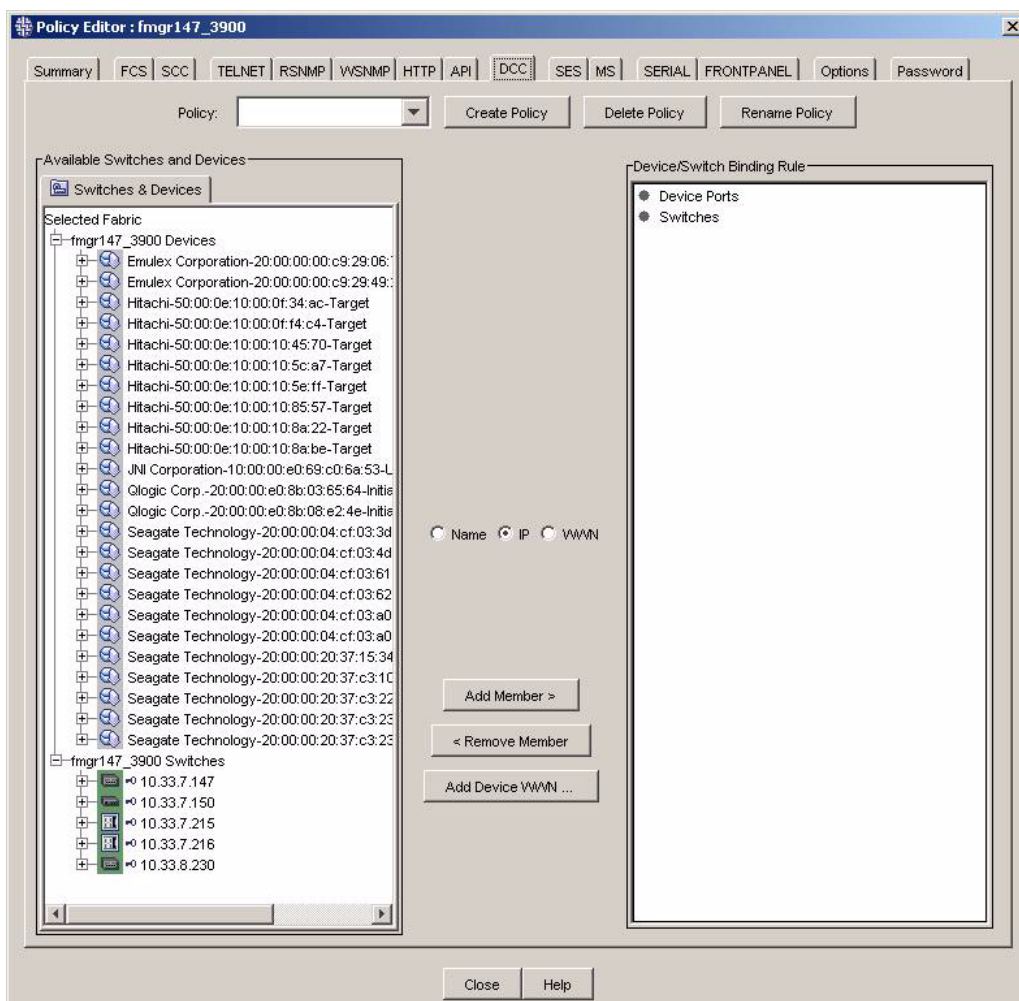


Figure 177 Configuring the DCC policy

4. Click **Create Policy**.

The Enter DCC Policy dialog box opens.

5. Enter a name for the new policy in the Enter Policy Name field and click **Create** in the Enter DCC Policy dialog box.

The new name is displayed in the Policy menu within the DCC tab.

6. Optional: Click **Name**, **IP** or **WWN** to change how the switches and devices are displayed in the Available Switches and Devices list.

7. Select a switch or device WWN from the Switches and Devices tab to add to the policy and then click **Add Member**.

To add a WWN that is not displayed, click **Add Device WWN** and enter the WWN you want to add.

8. To save your changes or activate the policy with the changes, select the **Summary** tab.

9. Click **Save** (from the Summary tab) to save your changes but not apply them, or click **Activate** (from the Summary tab) to save and apply your changes.

The Security Policy Review dialog box opens.

10. After reviewing the Security Policy, click one of the following:

- **Continue** to continue applying your changes
- **Cancel** to cancel your changes
- **Copy to File** to copy the Security Policy to a file

To make changes to your existing DCC policies:

1. From the SAN Elements tab, select a primary FCS switch for the secure fabric that you want to set policies on.
2. Select **Actions > Security > Security Policy Editor**.
The Policy Editor opens (see [Figure 173](#) on page 285).
3. Select the **DCC** tab (see [Figure 177](#) on page 292).
4. Perform any of the following actions for each DCC policy:
 - To remove a DCC policy, click **Policy > Policy Name You want to delete** and then click **Delete Policy**.
 - To rename a DCC policy, click **Policy > Policy Name You want to rename** and then click **Rename Policy**.
 - To change the contents of a DCC policy, click **Policy > Policy Name you want to edit**, and then:
 - Select a switch or device WWN from the Switches and Devices tab to add to the policy, and click **Add Member**.
 - To add a WWN that is not displayed, click **Add Device WWN** and enter the WWN you want to add.
 - Click **Save** to save your changes but not apply them or click **Activate** to apply your changes.

Configuring SES and MS policy options



NOTE: HP does not support SES.

Create an SES policy to allow device ports to access switches using the SES protocol. With Fabric Manager, you can create and configure multiple SES policies with unique names and populate SES policies with switch and device WWNs.

Create an MS policy to allow trusted fabric-connected devices to access the Management Server. With Fabric Manager, you can create and configure multiple MS policies with unique names and populate MS policies with switch and device WWNs.

SES and MS policies are both device-based.

To create an SES or MS policy:

1. From the SAN Elements tab, select a primary FCS switch for the secure fabric that you want to set policies on.
2. Select **Actions > Security > Security Policy Editor**.
The Policy Editor opens (see [Figure 173](#) on page 285).
3. Click the tab that corresponds to the policy you want (SES or MS).
The policy you selected opens (see [Figure 178](#)). The SES policy is used in this example.

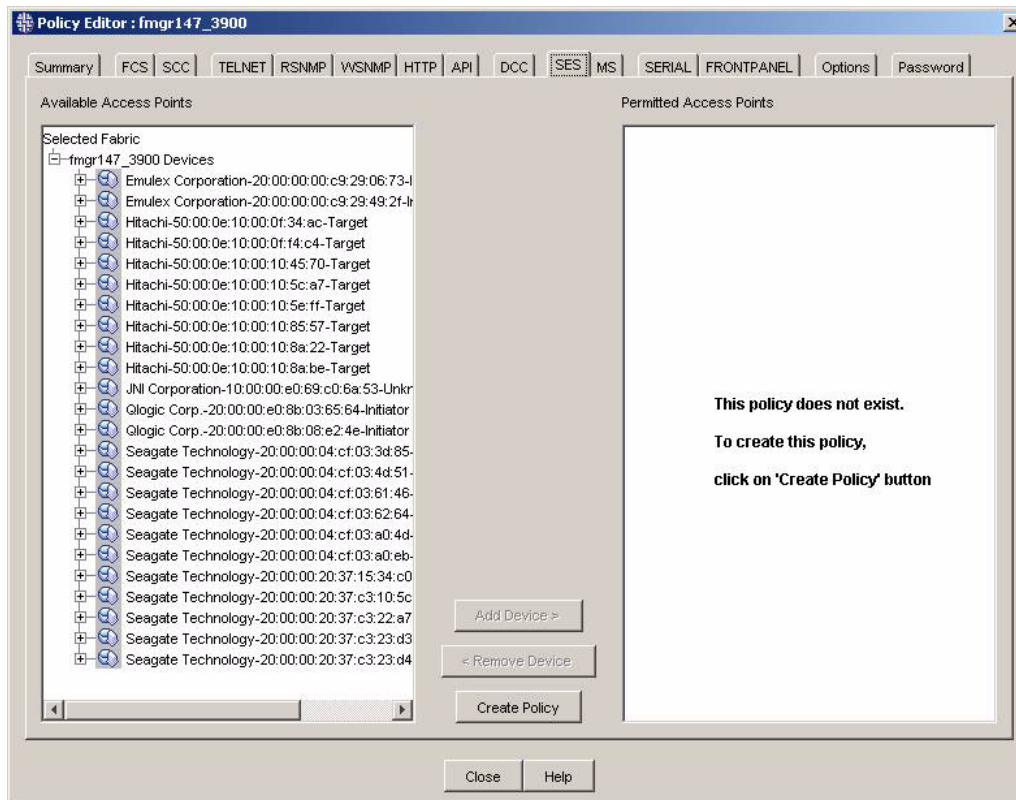


Figure 178 Configuring the SES policy

4. Click **Create Policy.**

The WWN of a device that connects to the fabric opens in the Available Access Points list.

5. Select a device from the Available Access Points list.

6. Click **Add Device.**

7. To save your changes or activate the policy with the changes, select the **Summary tab.**

8. Click **Save (from the Summary tab) to save your changes but not apply them or click **Activate** (from the Summary tab) to save and apply your changes.**

The Security Policy Review dialog box opens.

9. After reviewing the Security Policy, click one of the following:

- **Continue** to continue applying your changes
- **Cancel** to cancel your changes
- **Copy to File** to copy the Security Policy to a file

To make changes to your SES or MS policy:

1. From the SAN Elements tab, select a primary FCS switch for the secure fabric that you want to set policies on.

2. Select **Actions > Security > Security Policy Editor.**

The Policy Editor opens (see [Figure 173](#) on page 285).

3. Click the tab that corresponds to the policy you want (SES or MS).

The policy you selected opens (see [Figure 178](#) on page 294).

4. Perform any of the following:

- To add a device to the policy, select the device in the Available Access Points field and then click **Add Device**. Click the **Save** or **Activate** button within the Summary tab as appropriate.
- To remove a device from the policy, click the device in the Permitted Access Points field and then click **Remove Device**. Click the **Save** or **Activate** button within the Summary tab as appropriate.

Configuring serial and front panel policy options

Create a serial or front panel policy to grant serial port or front panel access to specific switches.



CAUTION: If you create policies without Fabric Manager client/server IP addresses, or if you create empty Serial, Telnet, HTTP, and API policies simultaneously, you will suddenly be unable to manage security and the switch.

To create a serial or front panel policy:

1. From the SAN Elements tab, select a primary FCS switch for the secure fabric that you want to set policies on.
2. Select **Actions > Security > Security Policy Editor**.
The Policy Editor opens (see [Figure 173](#) on page 285).
3. Click the tab that corresponds to the policy you want (Serial or Front Panel).
The policy you selected opens (see [Figure 179](#)). The Serial policy is used in this example.

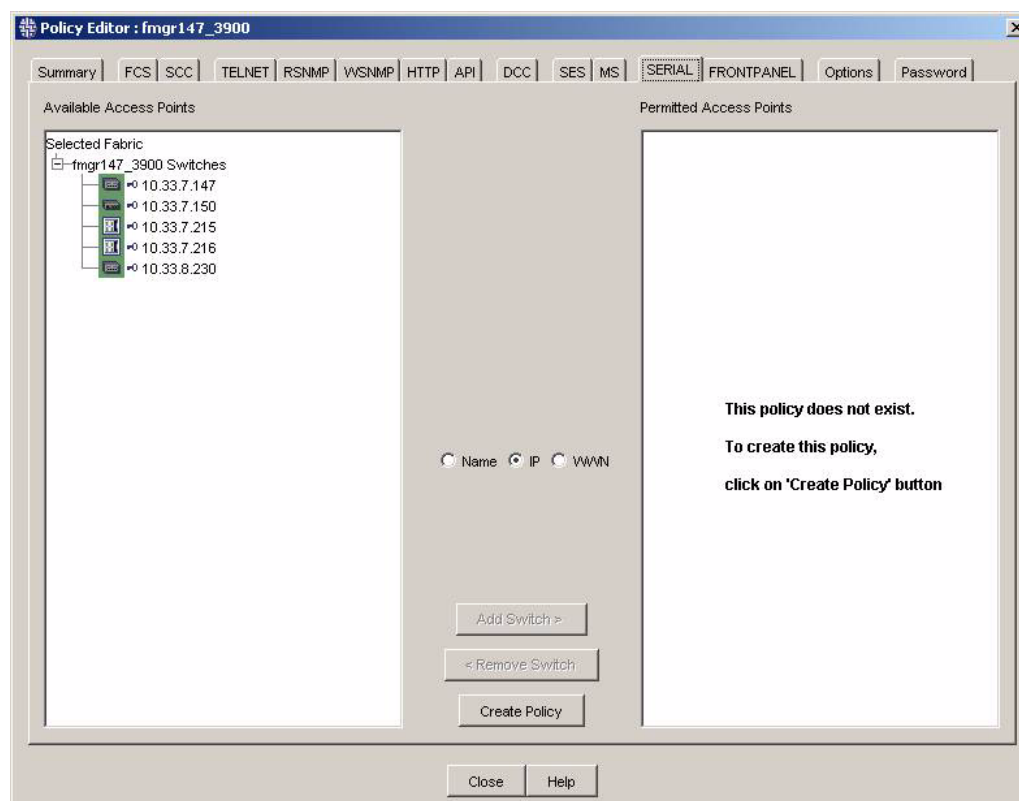


Figure 179 Configuring the serial policy

4. Click **Create Policy**.

You have now created an empty policy, which denies Serial and Front Panel access from all hosts to all switches in the fabric.



CAUTION: If you create policies without Fabric Manager client/server IP addresses, or if you create empty Serial, Telnet, HTTP, and API policies simultaneously, you will suddenly be unable to manage security and the switch.

5. Optional: Click **Name**, **IP**, or **WWN** to change how the switches and devices are displayed in the Available Access Points list.
6. Select a switch in the Available Access Points list and click **Add Switch** to add it to your policy. Repeat this step for each switch that you want to add.
7. To save your changes or activate the policy with the changes, select the **Summary** tab.
8. Click **Save** (from the Summary tab) to save your changes but not apply them or click **Activate** (from the Summary tab) to save and apply your changes.

The Security Policy Review dialog box opens.

9. After reviewing the Security Policy, click one of the following:

- **Continue** to continue applying your changes
- **Cancel** to cancel your changes
- **Copy to File** to copy the *Security Policy* to a file

To make changes to your Serial or Front Panel policy:

1. From SAN Elements tab, select a primary FCS switch for the secure fabric that you want to set policies on.
2. Select **Actions > Security > Security Policy Editor**.
The Policy Editor opens (see [Figure 173](#) on page 285).
3. Click the tab that corresponds to the policy you want (Serial or Front Panel).
The policy you selected opens (see [Figure 179](#) on page 295). The Serial policy in this example.
4. Perform either of the following:
 - To add a switch to the policy, click the switch in the Available Access Points list and then click **Add Switch**. Click the **Save** or **Activate** button in the Summary tab appropriate.
 - To remove a host from the policy, click the host in the Permitted Access Points field and then click **Remove Switch**. Click the **Save** or **Activate** button in the Summary tab appropriate.

Changing the admin security password

To change the password that implements security, perform the following steps:

1. From the SAN Elements tab, select a primary FCS switch for the secure fabric that you want to set policies on.
2. Select **Actions > Security > Security Policy Editor**.
The Policy Editor opens (see [Figure 173](#) on page 285).

3. Select the Password tab (see Figure 180).

The screenshot shows the 'Policy Editor : fmgr147_3900' window. The 'Password' tab is selected, displaying a form for changing the administrator password. The form includes three text input fields: 'FCS Administrator Password:', 'New Password:', and 'Verify:'. Below these fields are two radio buttons: 'FCS Switches' and 'Non-FCS Switches'. A 'Change Password' button is located at the bottom of the form. The window also features a tabbed interface at the top with tabs for 'Summary', 'FCS', 'SCC', 'TELNET', 'RSNMP', 'WSNMP', 'HTTP', and 'API'. At the bottom of the window are 'Close' and 'Help' buttons.

Figure 180 Configuring the FCS or non-FCS admin security password

4. Enter the current password in the FCS Administrator Password field.
5. Enter the new password in the New Password field.
Passwords must be 8 to 40 characters and must differ from the old password by at least one character.
6. Reenter the new password in the Verify field.
7. Click **FCS Switches** to change the admin password for secure FCS switches only, or click **Non-FCS Switches** to change the admin password for secure non-FCS switches only.
8. Click **Change Password**.
9. Click **Save** (from the Summary tab) to save your changes but not apply them or click **Activate** (from the Summary tab) to save and apply your changes.

Configuring no-node WWN zoning

Fabric Manager allows you to enable or disable No-Node WWN Zoning. When you enable this feature, security becomes port-oriented. Devices have port and node WWNs. When you disable node zoning, you ensure that devices with multiple ports cannot access secure fabrics with node WWNs. You must add individual port WWNs to your policies for devices to access your secure fabric.

To configure No-Node WWN Zoning:

1. From the SAN Elements tab, select the fabric node for the secure fabric that you want to set policies on.
2. Select **Actions > Security > Security Policy Editor**.
The Policy Editor opens (see Figure 173 on page 285).
3. Select the **Options** tab.
4. To enable No Node WWN Zoning, check the No Node WWN Zoning check box; to disable, un-check the **No Node WWN Zoning** check box.
5. Click **Save** (from the Summary tab) to save your changes but not apply them or click **Activate** (from the Summary tab) to save and apply your changes.

Adding a switch to a secure fabric

If you attempt to add a new switch to a secure fabric the same way you would add it to a non-secure fabric, the switch is rejected and segmented into its own fabric. In order for the switch to be added successfully, secure mode must first be enabled on the switch and then two secure fabrics must be merged together. For instructions on adding a switch to the SCC policy, see ["Configuring SCC policy options"](#) on page 288.

To add a switch to a secure fabric:

1. Enable secure mode on a single switch in a nonsecure fabric (see ["Enabling secure mode for a fabric"](#) on page 275).
2. Merge the two secure fabrics into one fabric using the secure fabric wizard (see ["Merging secure fabrics"](#) on page 298).

Merging secure fabrics

To merge secure fabrics that are not physically connected to each other into one fabric:

1. Click on a secure fabric from the SAN Elements Tab that you want to merge into a primary secure fabric.

This fabric will be the secondary fabric.

2. Select **Actions > Security > Merge with Secure Fabric**.

Before launching the Merge Secure Fabrics wizard (see [Figure 182](#)), Fabric Manager checks to see whether the fabric you have selected as the secondary fabric has a Change Management configuration, is part of a Performance Monitoring configuration, or both. [Figure 181](#) includes examples of the confirmation messages you could receive if Fabric Manager detects Change Management or Performance Monitoring configurations in the secondary fabric.

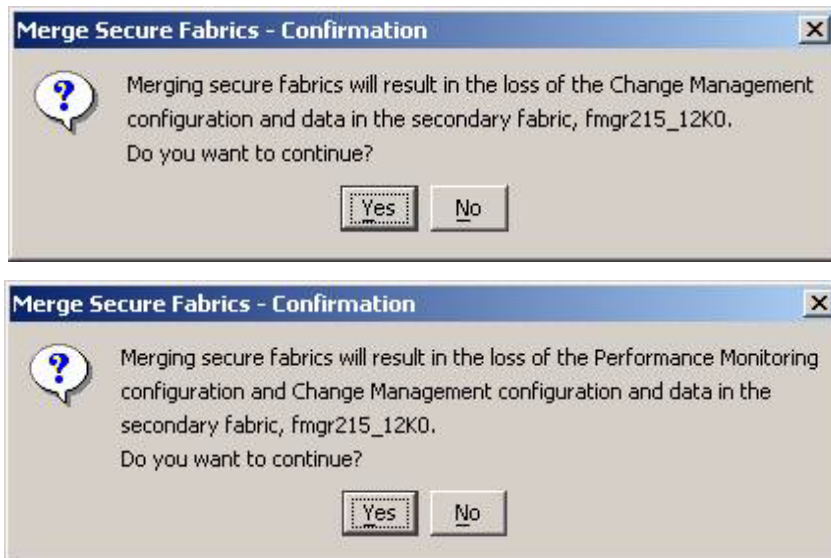


Figure 181 Merge secure fabrics confirmation messages



NOTE: The main fabric preserves all Change Management and Performance Monitoring configurations. If no Change Management or Performance Monitoring configurations exist on the secondary fabric, the Merge Secure Fabrics wizard (see [Figure 182](#)) opens without the confirmation messages.

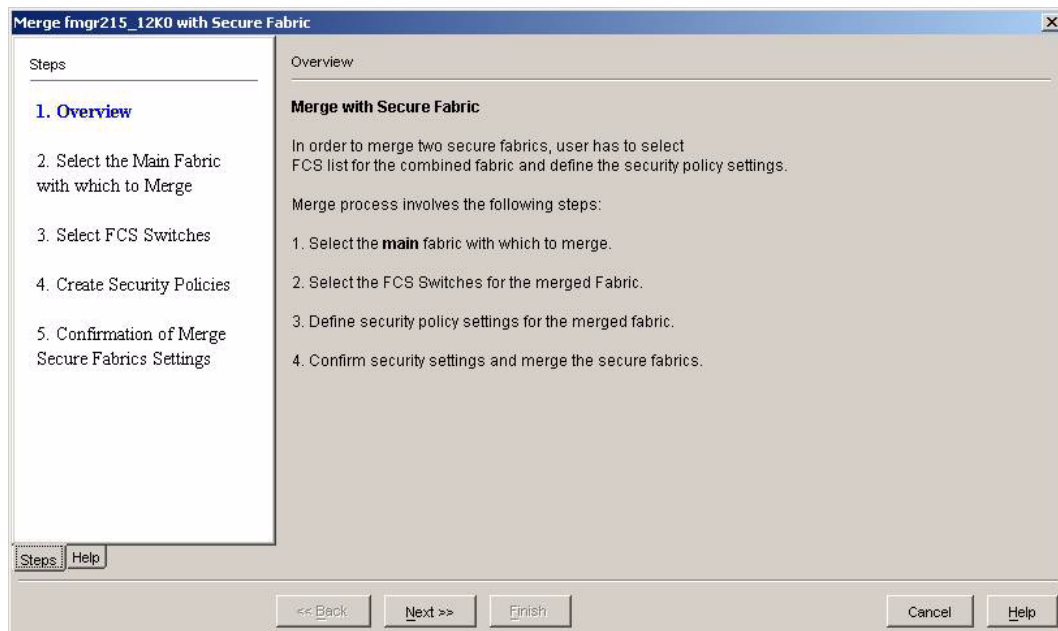


Figure 182 Merge secure fabric wizard

3. Read the overview information and then click **Next**.

The Select Main Fabric window opens (see [Figure 183](#)).

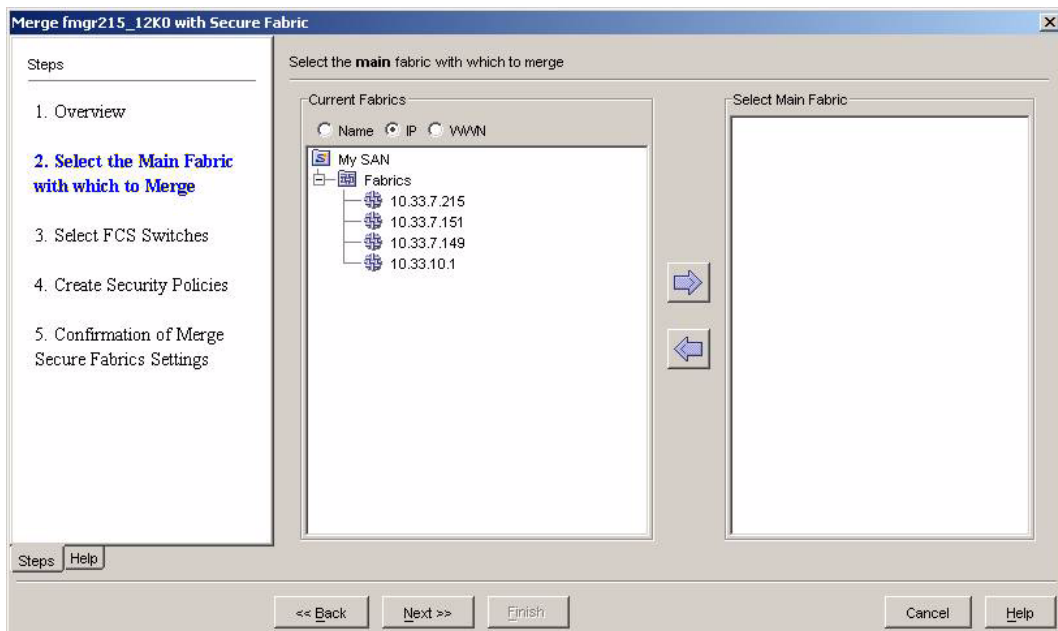


Figure 183 Select main fabric

4. Select the primary fabric (from the Current Fabrics pane) that you want the secondary fabric to merge with; then move it to the Select Main Fabric pane.

Use the right arrow or the drag and drop method (see [Figure 184](#)).

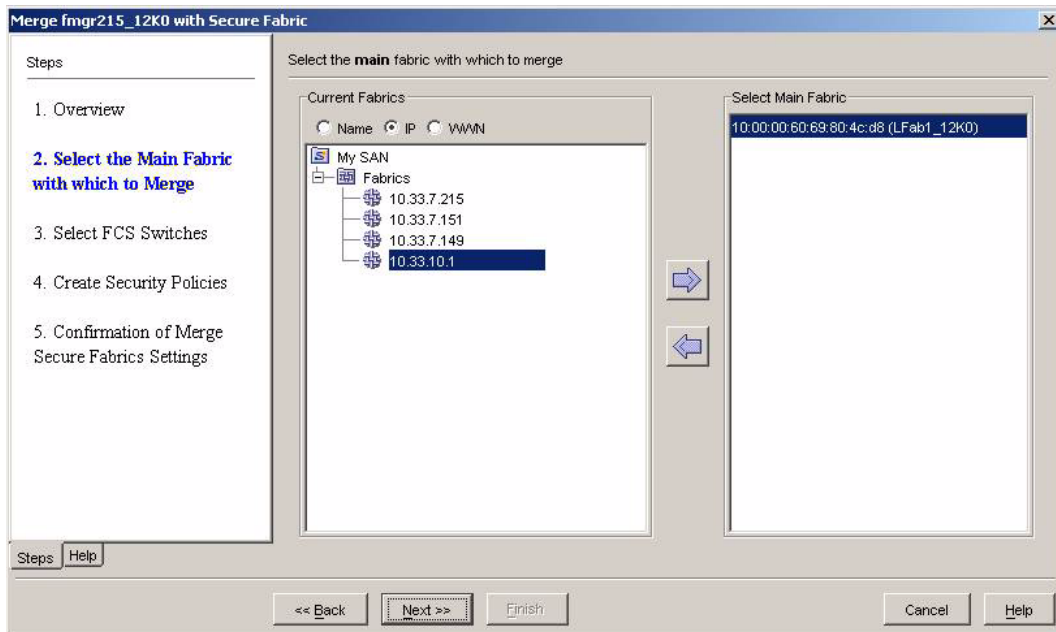


Figure 184 Main fabric selected

5. Click **Next**.

A confirmation window appears (see [Figure 185](#)). It lists the two fabrics you plan to merge, and also identifies the main fabric.



Figure 185 Merge confirmation

6. Click **Yes** if these are the two fabrics you want to merge and the main fabric is properly identified.

A merge fabric compatibility check is performed and you can receive the following results:

- Compatible parameters; the Select FCS Switches window opens (see [Figure 186](#)).
- Noncompatible parameters; a failure notice is displayed (see [Figure 187](#)). Click **OK**, and then exit the Merge Secure Fabrics wizard and fix the incompatibility through the CLI. After fixing the

incompatibility, run the Merge Secure Fabrics wizard again. Refer to the *HP StorageWorks Fabric OS 4.x command reference guide* for additional information about CLI commands.

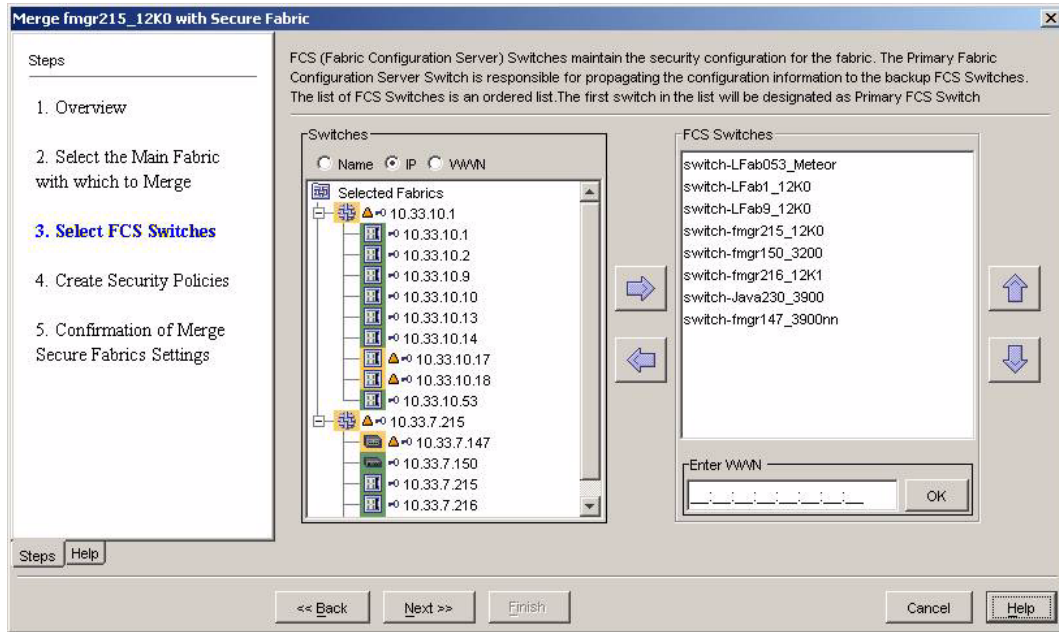


Figure 186 Select FCS switches

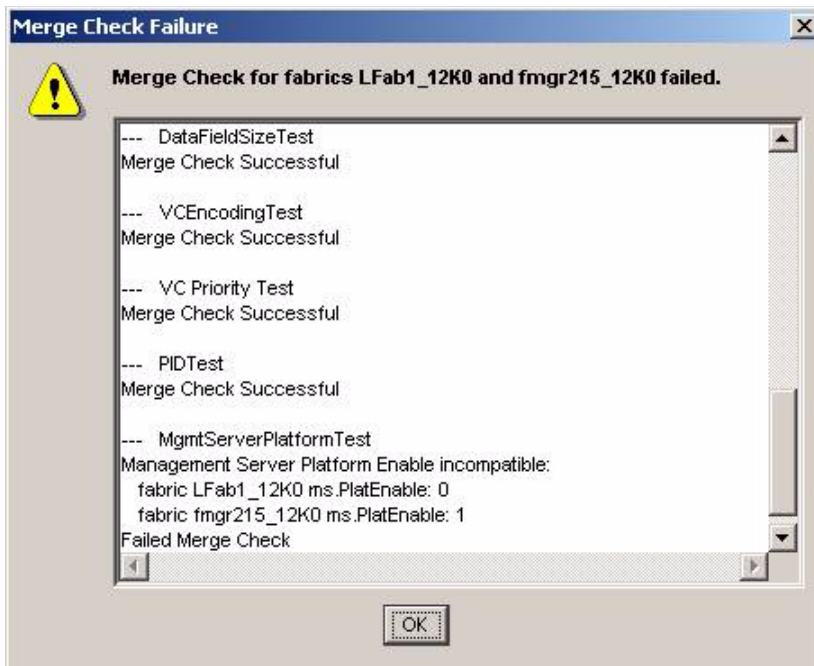


Figure 187 Merge failure check

7. Select the switches that you want to be the FCS switches for the merged fabric.

By default, all FCS switches from both fabrics are added to the list. You cannot remove or change the order of the FCS switches from the main fabric, but you can add, remove, or change the order of the switches in the secondary fabric.

8. Use the arrows to remove or change the order of the secondary switches.

9. Click **Next**.

A merged policy is created by default. All the switches are added to the SCC policy, and any other security policies are merged. You can then preview the security policies by clicking the **Merged**, **Main**, or **Secondary** buttons. See [Figure 188](#) for an example.



NOTE: You can change the security policy level by clicking the Low, Medium, or High buttons. This overrides the merged fabric policies.

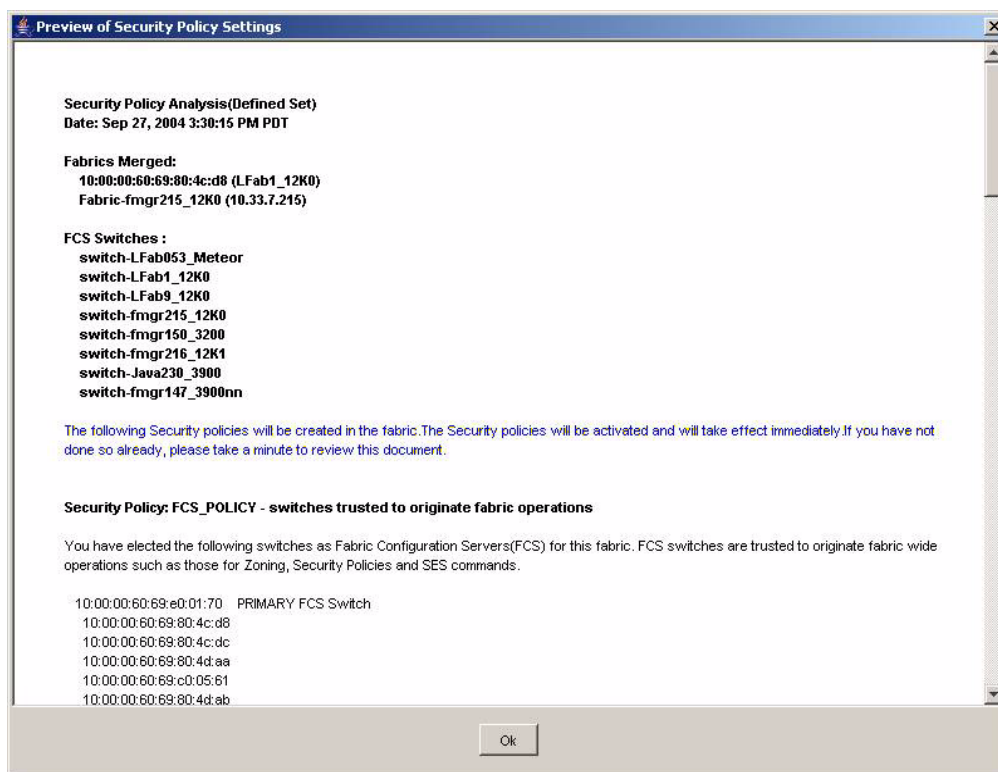


Figure 188 Security policy settings preview

10. Click **OK**.

The Merge Secure Fabrics Settings confirmation window opens (see [Figure 189](#)).

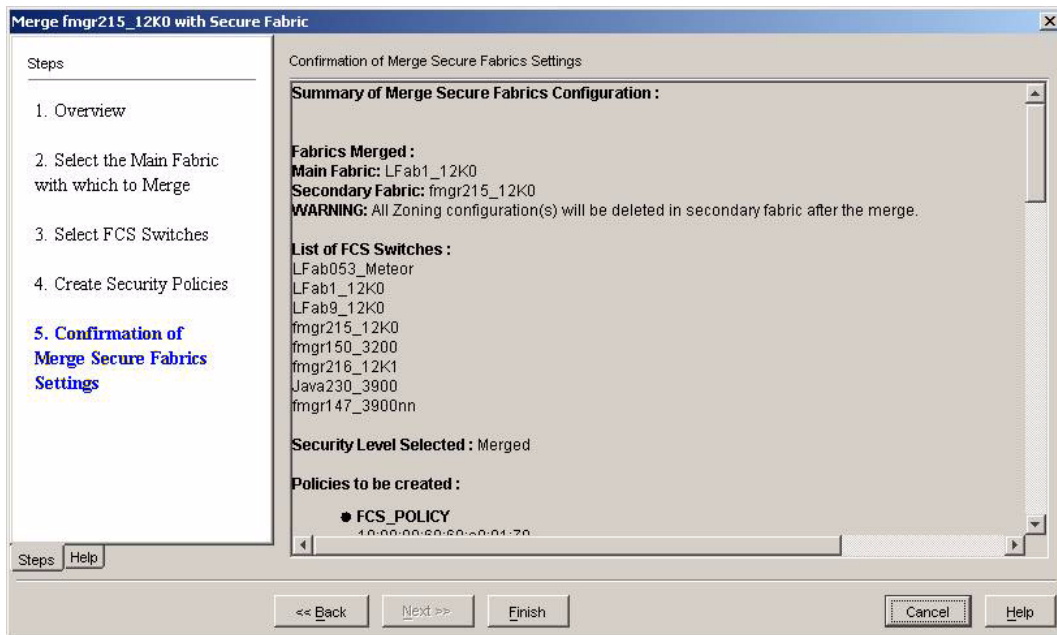


Figure 189 Merge secure fabrics settings confirmation

11. After reading the confirmation, click **Finish** to exit the Merge Secure Fabrics wizard. You can now connect the two fabrics physically.

Using telnet on a Secure Fabric

The telnet-to-FCS option is accessible for a secure fabric only when that fabric is selected from the SAN Elements tab. If a nonsecure fabric is selected, only the default telnet option is accessible from the Actions menu. SecTelnet is launched instead of the default telnet client for fabrics running secure Fabric OS.

To open a telnet session for a secure fabric:

1. Select a secure fabric from the SAN Elements tab.
2. Select **File > Telnet to FCS**.

The SecTelnet prompt displays. You can also launch a telnet session by right-clicking a switch from the SAN Elements tab.

3. Log in using your login ID and password.



NOTE: If a sectelnet session is already active on a secure switch running firmware versions v2.6.x or 3.1.0 and you attempt to launch a new session, you will receive the message, *Sorry, this system is engaged*. You must close the open telnet session and relaunch telnet for the secure switch.

17 Fabric merge check

This chapter describes how to perform a fabric merge check. The purpose of the fabric merge check is to eliminate the possibility of having the new fabric segment after it has been merged. During the merge check, Fabric Manager extracts copies of configuration elements from the two fabrics, runs tests (see [Table 68](#)) and compares them for inconsistencies. The inconsistencies are displayed in the Merge Check Results window (see [Figure 191](#) on page 306).

Table 68 Fabric merge check

Component tests		
All fabrics		Secure fabrics only
<ul style="list-style-type: none"> Domain IDs TimeOutValues Buffer-to-Buffer Credits Disable Device Probe Route Priority per Frame VC Priority Fabric Manager Configuration and Data 	<ul style="list-style-type: none"> Suppress Class F Long Distance Mode InterOp Mode Data Field Sizes VC Encoding PIDs Sequence Level Switching 	<ul style="list-style-type: none"> Security FCS policies* SCC policy* Version stamp* Management Server platform
		Non-secure fabric only
		<ul style="list-style-type: none"> Zoning
<p>*Test results for the FCS and SCC policies, and for the version stamp, are not displayed in the results of the fabric merge check (see Figure 191 on page 306).</p> <p>If a test is not applicable to the fabric, the test is not executed and Fabric Manager displays the message, Test not applicable to subject fabrics. For example, if one or more fabrics are secure, the management server platform test and the zoning test are not executed and the message is displayed.</p>		

To perform a fabric merge check:

1. Log in to the switches that you are considering merging. See ["Logging in to multiple switches simultaneously"](#) on page 130 for additional information.
2. From the Tools menu, select **Fabric Merge**.

The Fabric Merge Check dialog box opens (see [Figure 190](#)).

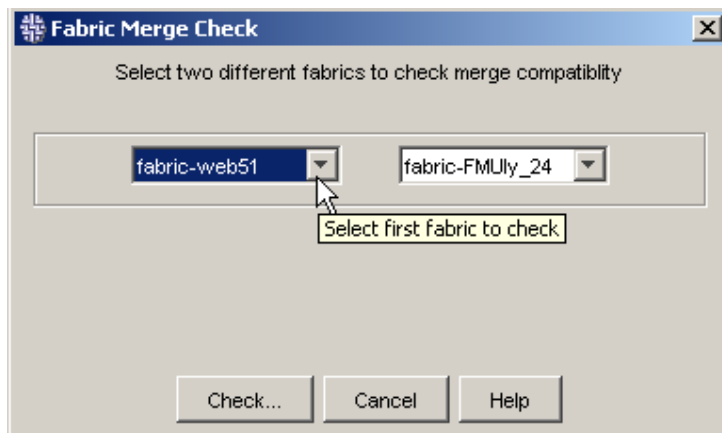


Figure 190 Fabric Merge Check dialog box

3. Select a fabric from each one of the pull-down menus. The fabric names viewable from each pull-down menu are checked for merge compatibility.

4. Click **Check**

The Merge Check Results displays a list of any inconsistencies between the two fabrics (see [Figure 191](#)).



NOTE: In some Fabric Manager screens the MP Router may be referred to as an FC Router.

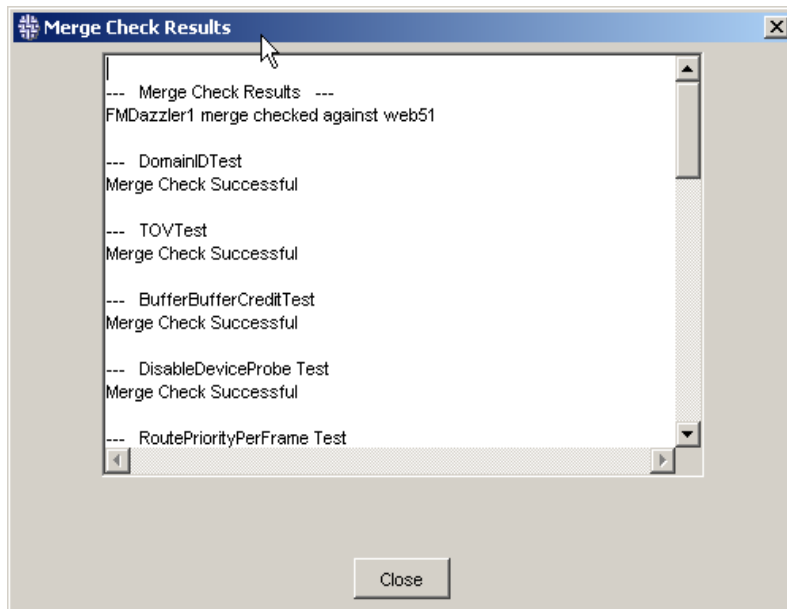


Figure 191 Merge Check Results



NOTE: If you run a fabric merge check between a secure fabric and a nonsecure fabric, the results of the Security, FCS policies, version stamp, and Management Server platform tests display the message, Not applicable to subject fabrics.

If the two zoning databases on the fabrics prevent the fabrics from merging, you are queried about launching the Zone Merge Manager tool.

5. Optional: Launch the Zone Merge Manager tool.

The Zone Merge Manager tool highlights all of the zoning conflicts between the two fabrics in red. With this information, you can resolve the conflicts and apply the results to either of the fabrics.

The Merge Check Results reopens (see [Figure 191](#)). At the zoning test stage, it reports, Merge Check Successful, along with the results of the other tests.

If you decided not to use the Zone Merge Manager tool, the zoning test reports Operator cancelled zone merge - Merge Check Failed for the zoning test, along with the results of all the other tests in the Merge Check Results window.

18 MP Router administration

Switches running XPath OS v7.1.0 or later can run a software application that enables you to share devices between two or more fabrics by using that switch as a Multi-protocol (MP) Router to connect to the different fabrics (see [Figure 192](#)). The MP Router has a new port type (EX_Port) that provides the connectivity between edge fabrics by using Interfabric links (see [Figure 193](#) on page 308) or a backbone fabric (see [Figure 194](#) on page 308).

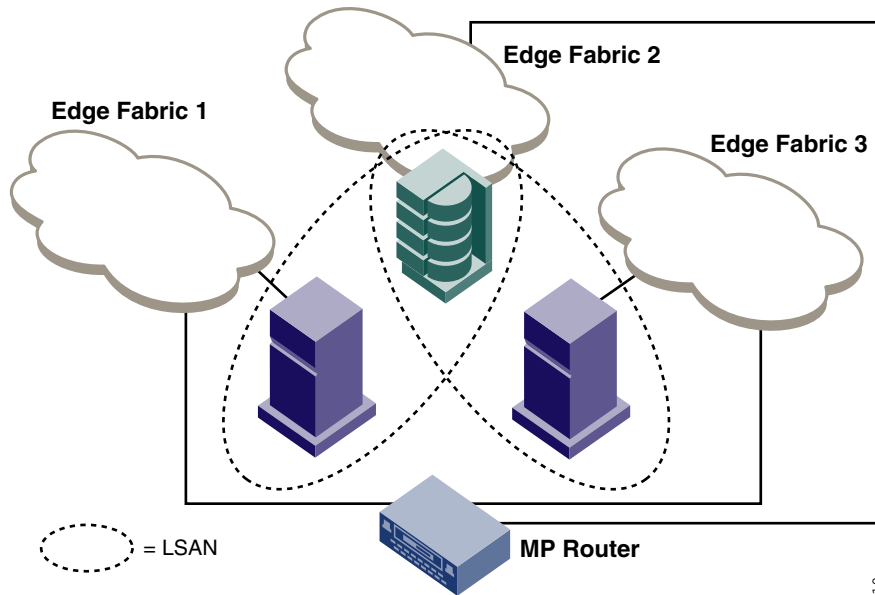


Figure 192 Simple meta-SAN

Fabric Manager scans all switches discovered. Any switches running the XPath OS are considered MP Router-capable. If an EX_Port is configured for that switch, the switch is MP-Router enabled. Switches that are MP Router-capable and MP-Router enabled have special icons associated with them in the SAN Elements tab, the Device Ports view, the Topology view, and in the At-A-Glance windows within the Overview view. You can use Fabric Manager to manage MP Routers and EX_Ports.

This chapter provides information on using Fabric Manager with an MP Router to share devices between fabrics. This chapter also describes how to connect edge fabrics and display Logical SANs (LSANs). Consult the following sections:

- [Edge SANs connected through a backbone fabric](#), page 308
- [Connecting edge fabrics](#), page 310
- [Displaying Logical SANs](#), page 312

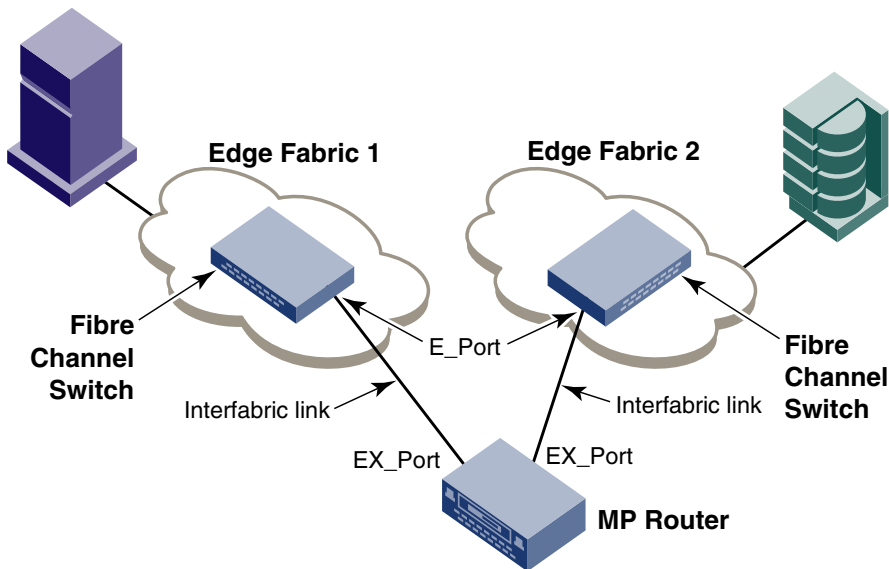


Figure 193 Meta-SAN with interfabric links

Figure 193 shows a meta-SAN consisting of two edge fabrics connected through an MP Router with interfabric links. Figure 194 shows another meta-SAN consisting of a host in Edge SAN 1 connecting to storage in Edge SAN 2 through a backbone fabric connecting two MP Routers.

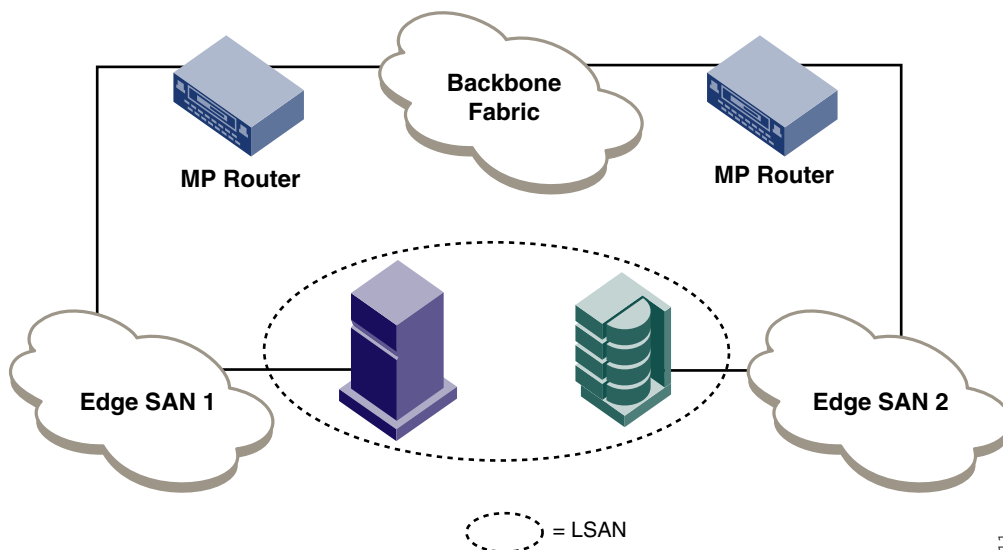


Figure 194 Edge SANs connected through a backbone fabric

Sharing devices between fabrics

You can share devices between fabrics without merging them together with the use of an MP Router (see [Figure 192](#) on page 307). Fabric Manager allows you to set up the shared devices easily with the Share Devices wizard. Using the Share Devices wizard, you must first select the devices you want to share, then the wizard creates a logical SAN.

Using Fabric Manager, you can view and monitor information about all of the fabrics connected through the MP Router in one place. Fabric Manager allows you to monitor FCR and EX_Port information.

To share devices between fabrics:

1. Select **Tools > Share Devices**.

The Share Devices wizard opens (see [Figure 195](#)).

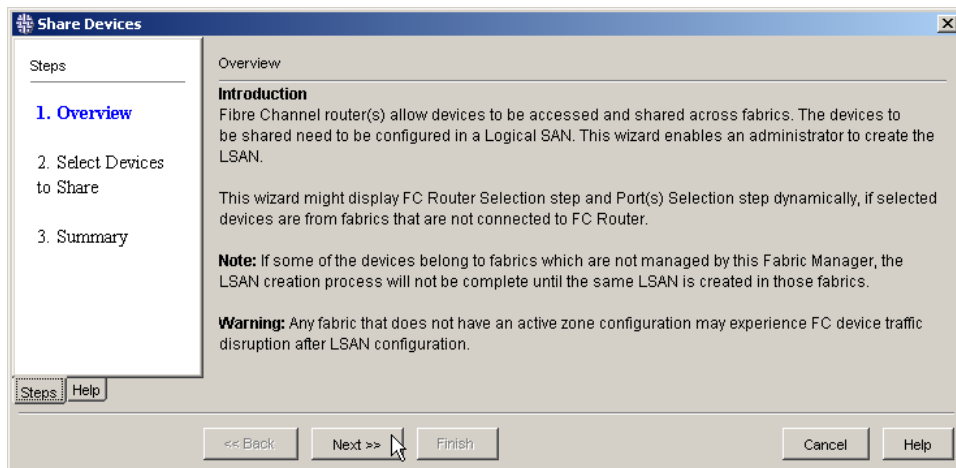


Figure 195 Share Devices wizard

2. Read the overview information and then click **Next**.

The Select Devices to Share window opens (see [Figure 196](#)).

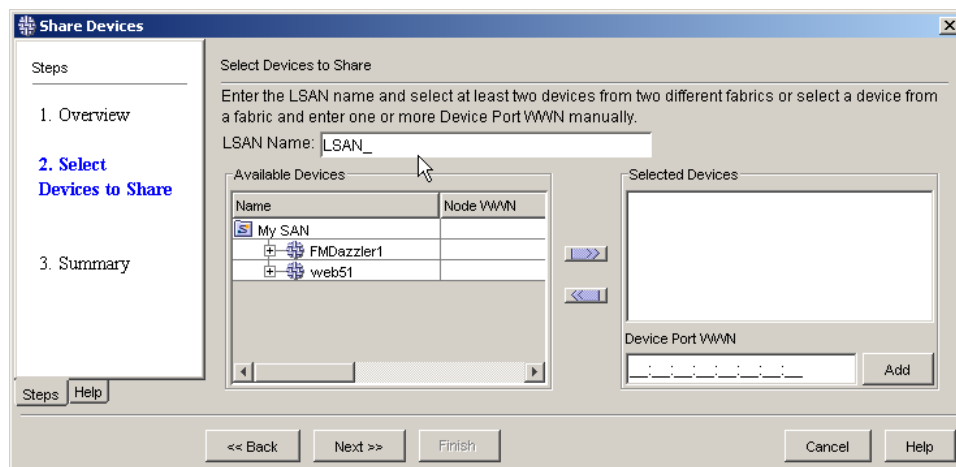


Figure 196 Selecting devices to share

3. Enter a name for the logical SAN (LSAN).
4. Click the names of the devices you want to share from the Available Devices list.

You must select at least one device from two different fabrics. If the devices are not displayed in the list, enter the Device Port WWN in the field provided below the Selected Devices list and click **Add**.

5. Click the right arrow to move the devices to the Selected Devices list.

6. Click **Next**.

A summary displays which devices are being shared in the new LSAN.

7. Read the summary.

If something is incorrect, click **Back** and then correct it. If everything is correct, click **Finish**.

Connecting edge fabrics

Fabric Manager allows you to connect edge fabrics to each other (see [Figure 193](#) on page 308). Select the MP Routers to be connected to the selected edge fabric. MP Routers from different backbone fabrics cannot be selected for this operation. Specify the Fabric ID for the edge fabric. The edge Fabric ID is unique across a backbone fabric (see [Figure 194](#) on page 308). If the selected edge fabric is already connected to the selected backbone fabric (or any other backbone fabric), the Fabric ID menu is already populated with the current value and disabled. The EX_Port parameters for *R_A_TOV*, *E_D_TOV*, and the PID Format are also set to match the edge fabric values of these parameters.

To connect edge fabrics:

1. Select a switch from the SAN Elements tab that you want to connect to an MP Router.

2. Select **Actions > FC Router Configuration**.

The FC Router- Connect Edge Fabrics wizard opens (see [Figure 197](#)).

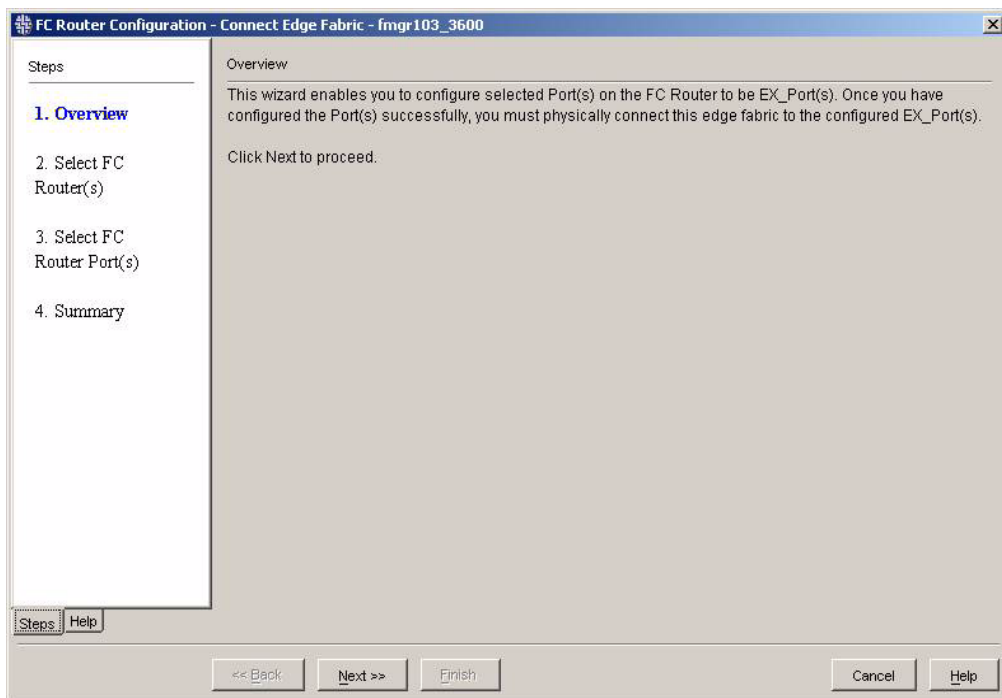


Figure 197 FC Router Configuration wizard

3. Read the information and then click **Next**.

The Select FC Routers window opens (see [Figure 198](#)).

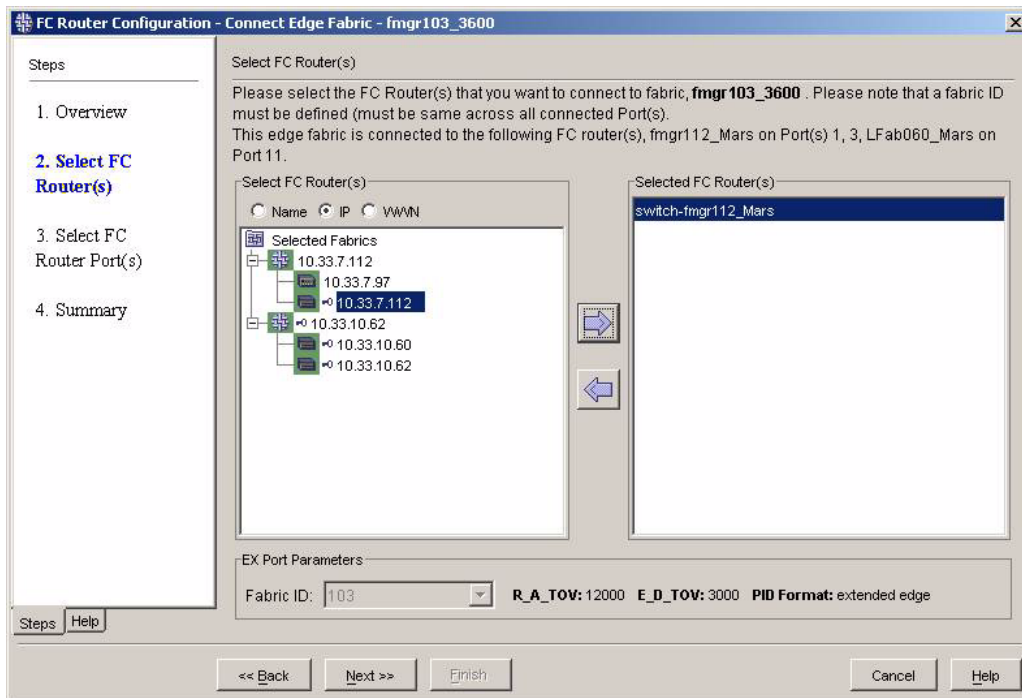


Figure 198 Select FC Routers

4. Select one or more MP Routers that you want to connect to the first edge fabric.
5. Click the right-arrow button to move them to the selected MP Routers list.
6. Select a Fabric ID for the EX_Port.
7. Click **Next**.

The Select FC Router Ports screen opens (see [Figure 199](#)).

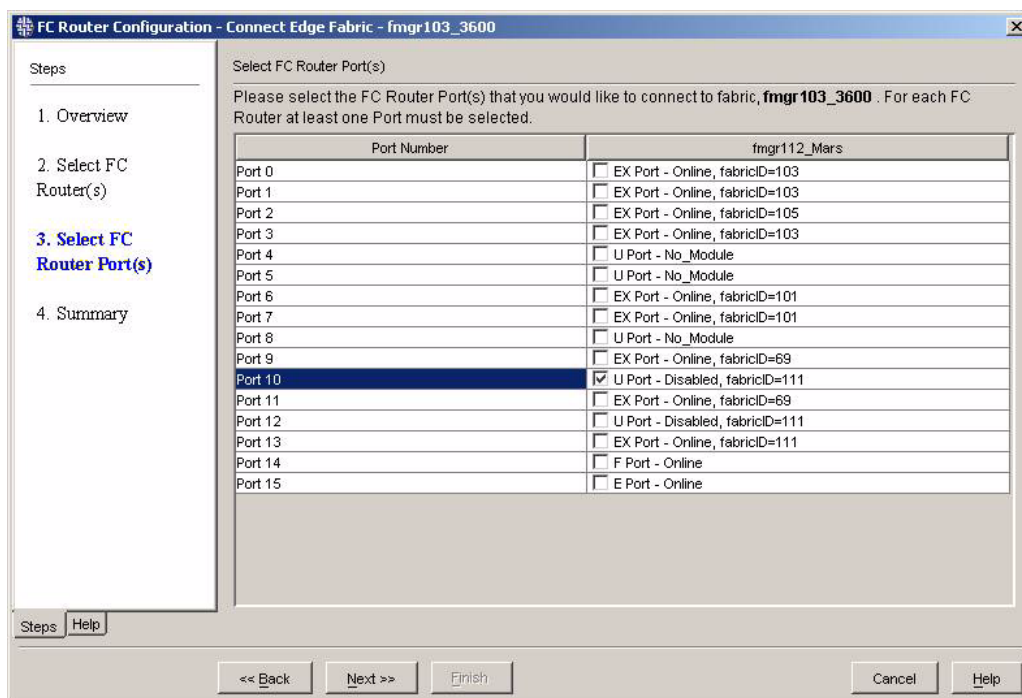


Figure 199 Selecting FC Router ports

8. Select the MP Router/port number that the first edge fabric is connected to.

9. Click **Next**.

A summary displays the ports and routers you have configured to be edge fabrics (see [Figure 200](#)).

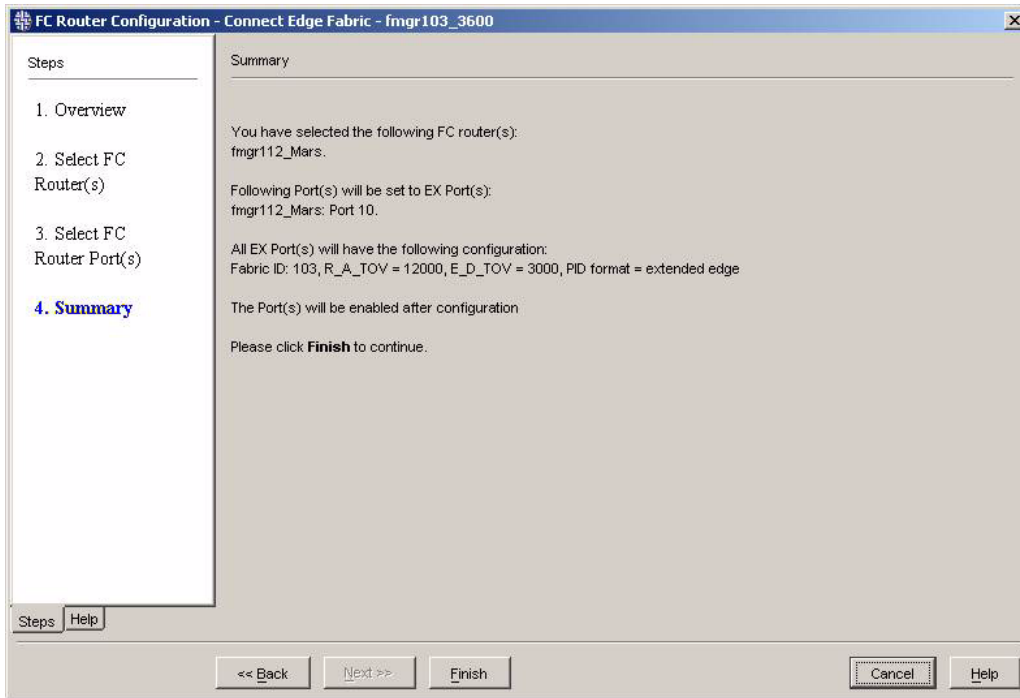


Figure 200 Summary of FC Router configuration

10. Read the summary.

If everything is correct, click **Finish**. A confirmation is displayed stating that the MP Router configuration may take a few minutes to complete.

11. Click **Yes** to complete the configuration process.

An information message informs you that the configuration completed successfully and that you should physically connect the selected edge fabrics to the MP Router switches.

12. Click **OK**.

13. Click **Close** from the Summary screen to exit.

Displaying Logical SANs

The Fabric Manager LSAN view (see [Figure 75](#) on page 101) is available only when an edge fabric is selected from the SAN Elements tab. An additional view (LSAN Info), is available only when you select an MP Router from the SAN Elements tab (see [Figure 76](#) on page 102). See "[LSAN view](#)" on page 102 and "[LSAN Info View](#)" on page 103 for additional information about these two views.

19 Performance monitoring

The performance monitoring feature in Fabric Manager provides insight into how much traffic a particular target/initiator is generating on the fabric over a timeframe. It is also used to indicate the devices that are creating the most traffic and to identify the ports that are the most congested.

The benefit of using performance monitoring is diminished if it is enabled or disabled on an as-needed basis. Performance monitoring needs to be enabled constantly to receive the necessary historical data required for a meaningful report.

When you install Fabric Manager (server only, or both server and client), the database table schemas used for the performance monitoring features are copied to the same location where Fabric Manager is installed: `Fabric Manager\server\db\schema`.

You can use Fabric Manager or an external tool (such as Crystal Reports) to run reports and generate graphs based on the information captured in Fabric Manager.

Performance monitoring is enabled or disabled on an entire fabric, not on a switch or port basis. Before you can enable performance monitoring and create reports, graphs, or report templates, you must first log in to the launch switch of the fabric. The launch switch must have an activated Advanced Performance Monitoring license if you want the end-to-end feature (it is not required for port statistics monitoring). End-to-end monitors are not set on switches without the license.

All the data collected in performance monitoring is stored in the database. To monitor large fabrics, make sure you have ample database space to store all of the information.

If you delete a fabric, all performance monitoring data for that fabric is also deleted from the database.

Consult the following sections for information about working with performance monitoring:

- [Performance monitoring components](#), page 314
- [Enabling performance monitoring](#), page 317
- [Disabling performance monitoring](#), page 319
- [Generating custom reports and graphs](#), page 320
- [Creating and using report templates](#), page 325
- [Saving Performance Monitor reports or graphs](#), page 329
- [Printing Performance Monitor reports](#), page 329
- [Exporting reports](#), page 330
- [Displaying saved reports and graphs](#), page 330
- [Deleting reports and graphs](#), page 331
- [Editing Performance Monitor graphs](#), page 332
- [Displaying Performance Monitor reports in external applications](#), page 332

Performance monitoring components

Before you start using performance monitoring on your fabric, you need to be familiar with the following components:

- ["Port statistics"](#) next
- ["End-to-end monitoring"](#) on page 314
- ["Granularity"](#) on page 315
- ["Reports"](#) on page 315
- ["Graphs"](#) on page 315
- ["Templates"](#) on page 316

Port statistics

The port statistics component within the performance monitoring feature in Fabric Manager allows you to see how much traffic a particular port is generating on a fabric through a period of time. The receive (RX) and transmit (TX) values for ports are retrieved over a specific timeframe and stored in a database. Monitoring port statistics does not require an Advanced Performance Monitoring license.

End-to-end monitoring

End-to-end monitoring sets all possible target/initiator pairs from the filtered list retrieved from the API for the fabric. Fabric Manager stores the configuration of the monitors persistently and periodically re-creates them on the fabric as necessary. Each time the Fabric Manager server retrieves the monitor values, it checks for and re-creates any monitors (configured through Fabric Manager) that are no longer present. If a resource limit is reached while trying to set all of the possible pairs, the Performance Monitor does not attempt to determine the best set of monitors. Instead, monitors are set on a first-come, first-serve basis (in the order presented to Fabric Manager from the API).

Configuration of data capture file information is not supported. Data collection is set at 5-minute intervals for small and medium SANs, and at 15-minute intervals for large SANs at the time of installation, depending on the size of the SAN you select.

The data collection interval is the same for all fabrics and is determined by the size of your SAN.

Fabric Manager attempts to set the monitors between the following types of devices only:

- Initiator-Target
- Initiator-Unknown
- Unknown-Target
- Unknown-Unknown

Monitors between Initiator-Initiator and Target-Target are not set. Monitors between all other device types are valid. If a device role is *Both* or *Unknown*, it is regarded as both an Initiator and a Target, causing monitors to be set between it and all other devices it can talk to.

Granularity

Granularity is the timeframe for the sample values that are used to generate a report. Since Fabric Manager stores a limited number of samples for each granularity, every level of granularity is not available for all possible time ranges. For example, if you select a timeframe to be the past three days, the five-minute granularity level is not available. The options for granularity (for both Port Statistics and End-to-End Monitoring) are listed in [Table 69](#).

Table 69 Stored samples (per fabric) for granularity options

Granularity	Samples	Time covered in stored samples
5 minutes	600	2 days and 2 hours
30 minutes	700	2 days and 2 hours, plus 12.5 days
2 hours	775	2 days and 2 hours, plus 12.5 days, plus 50 days
1 day	797	2 days and 2 hours, plus 12.5 days, plus 50 days, plus 732 days (rounded to 797 days)
The Fabric Manager polling rate is determined by the size of the SAN that Fabric Manager is managing. It can be either 5 or 15 minutes as configured during installation (see Table 6 on page 35 for a list of the polling rates for each SAN size). If the polling rate is set to 15 minutes, the default granularity is displayed as 15 minutes instead of 5 minutes throughout performance monitoring.		

There may be gaps in the stored data. Events that can cause gaps in data include:

- Authentication failures: Fabric Manager uses switch usernames and passwords to store data. If the password is changed (resulting in an authentication failure) on a switch where performance monitoring is enabled, data collection fails (creating a gap in the stored data).
- Switch not reachable: Data is not gathered if the launch switch is unreachable. If the launch switch is reachable, but additional switches in the fabric are unreachable by Ethernet, the data is gathered.
- Performance monitoring is not enabled: Data is not being gathered, causing a gap in the stored data.



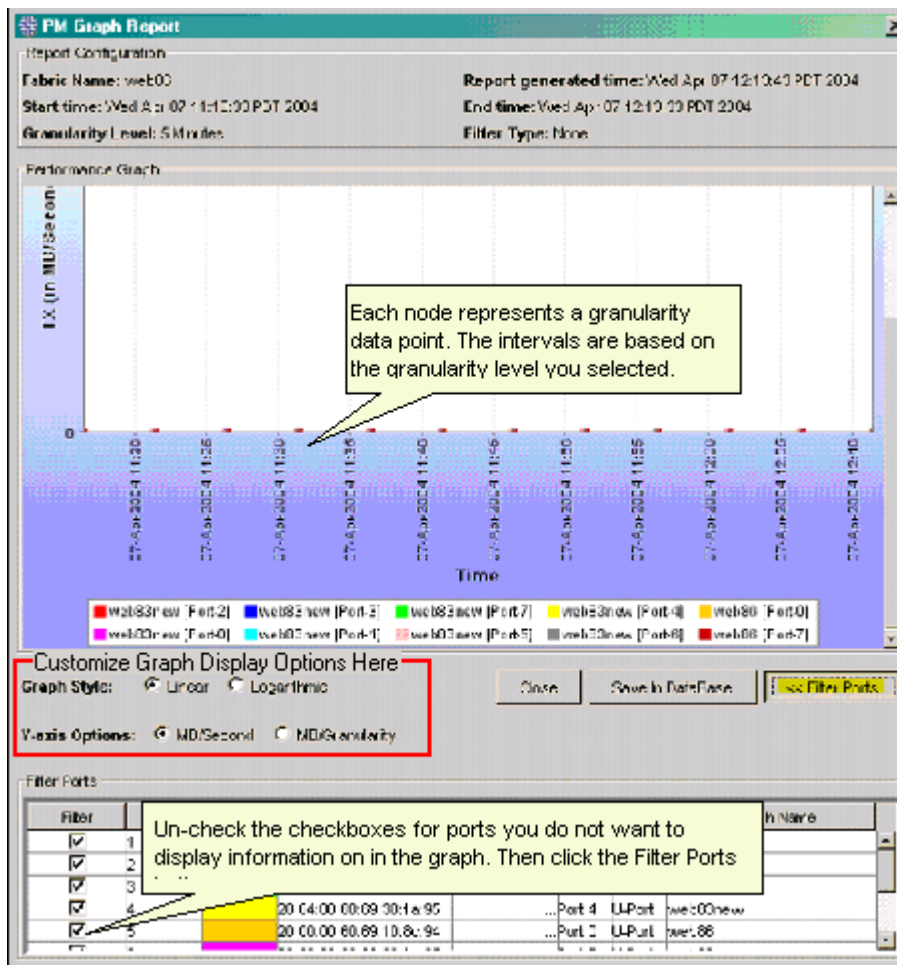
NOTE: If data is not available for some of the granularity points when values are rolled up to the next time period value, the missing data is ignored. For example, if five of six 5-minute values are 50, and the sixth value is missing: N1= 50, N2= 50, N3=50, N4= 50, N5= 50, N6= NA. The rolled up value for 30-minute entry=250 (because the N6 value is calculated as if it is a value of zero).

Reports

Fabric Manager allows you to create reports in two forms: Reports and Graphs. In Fabric Manager, you can create customized reports (see ["Creating custom reports"](#) on page 320), or create reports from templates (see ["Creating and using report templates"](#) on page 325). You can also save (see ["Saving Performance Monitor reports or graphs"](#) on page 329), print (see ["Printing Performance Monitor reports"](#) on page 329), and export reports (see ["Exporting reports"](#) on page 330) created in Fabric Manager.

Graphs

Fabric Manager allows you to create graphs of performance data (see [Figure 201](#)). There are no templates for Performance Monitor graphs; however, you can create custom graphs (see ["Creating custom graphs"](#) on page 323), or edit existing for graphs (see ["Editing Performance Monitor graphs"](#) on page 332).



Templates

To generate an ongoing report without a specified time interval, you can generate a Performance Monitor report from a template. Fabric Manager has six templates by default. The defaults templates are described in [Table 70](#).

Table 70 Default performance monitoring report templates for port statistics

Report/graph	Type	Format	Time	Granularity	Filter
Report	Top N of Ports (Aggregate Tx/Rx Traffic) over time T	Display (HTML)	Last 1 hour	5 minutes	None
Report	Top N of Ports (Aggregate Tx/Rx Traffic) over time T	Display (HTML)	Last 30 minutes	5 minutes	None
Report	Top N of Ports Receiving (Rx) traffic over time T	Display (HTML)	Last 1 hour	5 minutes	None
Report	Top N of Ports Receiving (Rx) traffic over time T	Display (HTML)	Last 30 minutes	5 minutes	None
Report	Top N of Ports Generating (Tx) traffic over time	Display (HTML)	Last 1 hour	5 minutes	None
Report	Top N of Ports Generating (Tx) traffic over time	Display (HTML)	Last 30 minutes	5 minutes	None

You can create and save additional templates. For more information, see ["Creating templates for reports and graphs"](#) on page 325.

Enabling performance monitoring



CAUTION: The retrieval of port statistics and end-to-end monitoring of data can take longer than expected if you issue any CPU-intensive commands (such as the porttest diagnostic command) while performance monitoring is enabled.

Using the Performance Monitor feature, you can collect information about the traffic generated between ports (end-to-end) and the receive/transmit traffic on individual switch ports. The Performance Monitor data is not stored on the Fabric Manager database during periods when the feature is not enabled.



NOTE: Performance Monitor is designed to be enabled at all times. Its benefits are diminished if the historical data is not available to you when you need it.

Before you can enable the Performance Monitor feature, you must be logged in to the launch switch of the fabric you want to monitor and it must have an active Advanced Performance Monitoring license.

To enable the Performance Monitor:

1. Select the launch switch in the SAN Elements tab.
2. Select **Actions > Performance Monitor > Configuration**.

The Performance Monitoring Configuration dialog box opens (see [Figure 202](#)).

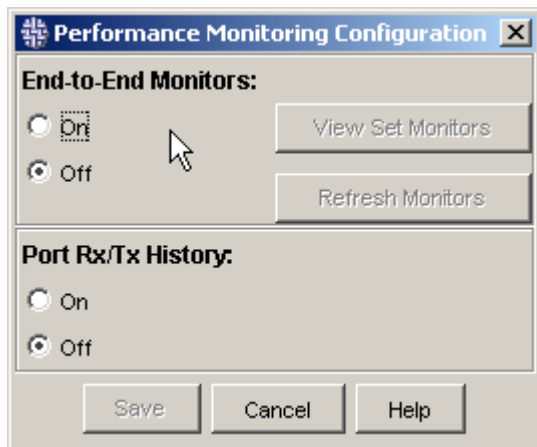


Figure 202 Performance Monitoring Configuration dialog box

3. If you want to collect end-to-end statistics, click **On** within the End-to-End Monitors display.
If you want to collect switch port transmit/receive data, click **On** within the Port Rx/Tx History display.
4. Click **Save** to enable or disable performance monitoring.
5. Optional: Select **View Set Monitors** to see the list of devices that are being monitored.

The End-to-End View Set Monitors dialog box opens (see [Figure 203](#)). This table lists all the device pairs (Initiators and Targets) that are being monitored. This list is useful if there is a resource limitation or license issue and all possible conversations are not being monitored. The monitors that could not be set are listed within the Not Set Monitors tab.

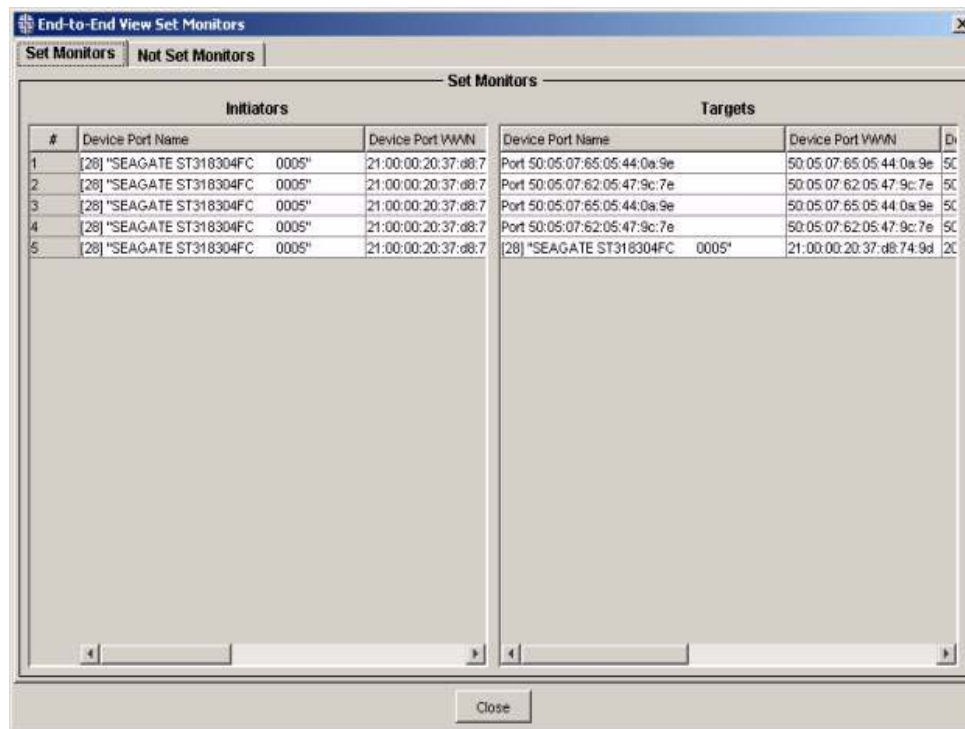


Figure 203 Viewing the end-to-end monitors that are set/not set

6. Click **Close** to return to the Performance Monitoring Configuration dialog box (see [Figure 202](#)).

7. Optional: Select **Refresh Monitors** to reestablish the End-to-End monitor set at any time.

This option is useful when you do not want to wait for the monitor set to be updated (for example, after zoning changes have been made).

Refreshing monitors

During refresh, the following occurs:

- Monitors are set for any new devices that have joined the fabric.
- Monitors are removed from any devices that have left the fabric.
- Monitors are removed from any devices that cannot talk to each other and added to any devices that can talk to each other as the result of a zoning change.

If end-to-end monitoring is enabled on a fabric, Fabric Manager automatically refreshes end-to-end monitors every 24 hours. The 24-hour time period is started when the server starts. For example, if the server is initiated at 3:22 PM, refresh occurs at 3:22 PM every day. If you need to restart the server, the 24-hour timeframe is reset to the new server start time.

You can have a successful monitor refresh only if you initiate the operation when no other client has already initiated refresh monitors for the fabric or when an automatic refresh is not already underway.

After initiating refresh monitors successfully by clicking the Refresh button, you receive a Refresh scheduled successfully message. The message End-to-End Monitoring configuration in progress is displayed in the status bar until the refresh is complete.

If the refresh is already in progress and a client opens the Performance Monitor Configuration dialog box, all of the performance monitoring functionality with the dialog box is disabled and the End-to-End Monitoring configuration in progress message is dappled in the status bar.

If you click Refresh Monitors and an error occurs, an error message dialog box opens.

The Alerts view is updated with the status of the refresh operation after one is initiated. This is useful after you have initiated a refresh process and closed the Performance Monitor Configuration dialog box.

If the Performance Monitor Configuration dialog box is open when the refresh completes, you receive a success message dialog box that indicates the status of the monitors set. Also, the status bar is updated with the successfully completed message.

The Fabric Manager server periodically checks the fabric for any changes (such as zoning and device movement) and updates the end-to-end monitors set for the fabric. This occurs only once a day, since it is an expensive operation. You can trigger the refresh manually by clicking the Refresh Monitors button in the Performance Monitor Configuration dialog box. This operation can take up to one hour to complete. You can perform other operations during this time and you can check the status of the refresh operation in the Alerts view.

Disabling performance monitoring

Using the Performance Monitor feature you can collect information about the traffic generated between ports (end-to-end) or the receive/transmit traffic on individual switch ports. The Performance Monitor data is not stored on the Fabric Manager database during periods when the feature is not enabled.



NOTE: Performance Monitor is designed to be enabled at all times. Its benefits are diminished if the historical data is not available to you when you need it.

Before you can disable the Performance Monitor feature, you must be logged in to the launch switch of the fabric you want to monitor.

To disable the Performance Monitor:

1. Select the launch switch in the SAN Elements tab.
2. Select **Actions > Performance Monitor > Configuration**.

The Performance Monitoring Configuration dialog box opens (see [Figure 202](#) on page 318).

3. If you want to stop the collection of end-to-end statistics, click **Off** from the End-to-End Monitors display.

If you want to stop the collection of individual switch port data, click **Off** from the Port Rx/Tx History display.

4. Click **Save**.

Generating custom reports and graphs

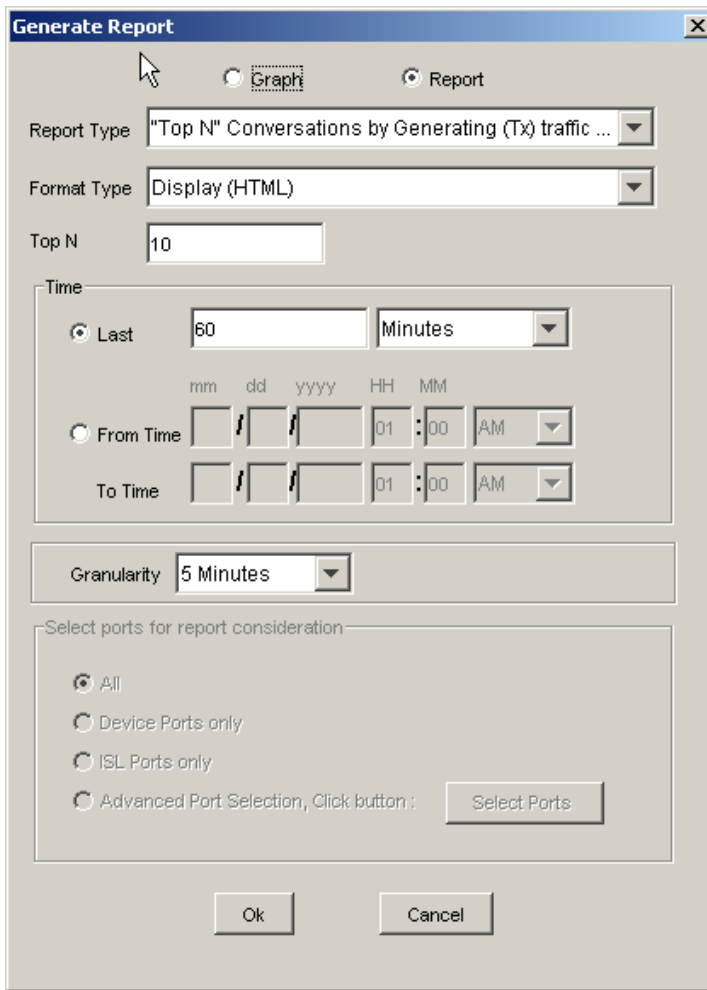
You can use the Performance Monitor to create a custom one-time user report, or a report for a specific timeframe. You can generate the custom Performance Monitor report in two formats: report or graphical.

Creating custom reports

To generate custom Performance Monitor reports:

1. Select a switch in the SAN Elements tab.
2. Select **Actions > Performance Monitor > Reports > Generate Custom Reports**.

The Generate Report dialog box opens (see [Figure 204](#)).



The image shows a 'Generate Report' dialog box with a title bar and a close button. It contains two radio buttons at the top: 'Graph' (unselected) and 'Report' (selected). Below these are three fields: 'Report Type' with a dropdown menu showing '"Top N" Conversations by Generating (Tx) traffic ...', 'Format Type' with a dropdown menu showing 'Display (HTML)', and 'Top N' with a text input field containing '10'. A 'Time' section contains three options: 'Last' (selected) with a text input '60' and a dropdown 'Minutes'; 'From Time' with fields for mm, dd, yyyy, HH, MM, and AM/PM; and 'To Time' with similar fields. Below the time section is a 'Granularity' dropdown menu showing '5 Minutes'. A section titled 'Select ports for report consideration' contains four radio buttons: 'All' (selected), 'Device Ports only', 'ISL Ports only', and 'Advanced Port Selection, Click button :'. To the right of the last option is a 'Select Ports' button. At the bottom are 'Ok' and 'Cancel' buttons.

Figure 204 Generate Custom Report dialog box

3. Click **Report**.

4. Select one of the following report types:

For End-to-End monitoring reports:

- Top N Conversations by Generating (Tx) traffic over time T
- Top N Conversations by Receiving (Rx) traffic over time T
- Top N Conversations by Aggregate (Tx/Rx) traffic over time T

For Port Statistics reports:

- Top N of ports Generating (Tx) traffic over time T
- Top N of ports Receiving (Rx) traffic over time T
- Top N of ports Aggregate (Tx/Rx) traffic over time T

5. Select one of the following formats for the report:
 - Display HTML, which displays the report in HTML format.
 - Export XML, which saves the report as an XML file. The XML format is useful if you want to export the data to another application.
 - Export HTML, which saves the report as an HTML file.
6. Enter the number (1 through 100) of results you want for the report in the Top N field.
7. Define the time range or interval using one of the following:
 - Click **Last**, enter a number, then select the time increment (**minutes**, **hours**, or **days**)
 - Click **From Time**, and then enter values in the From Time and To Time fields. This includes the month (mm), day (dd), year (yyyy), hour (HH), minute (MM) and morning (AM) or night (PM)
8. Select the Granularity (the time interval between samples).
The available options are: 5 minutes, 30 minutes, 2 hours, and 1 day. See "[Granularity](#)" on page 315 for information on how granularity is calculated.
9. For Port Statistics reports only (skip to [step 11](#) for End-to-End monitoring reports). Select what ports you want to generate the report on:



NOTE: If the port type of a switch in a fabric changes, and Performance Monitor is enabled, multiple port WWNs with different port types are displayed in the Performance Monitor table and graph reports.

- Click **All**, which includes all ports in the database with the specified granularity and time range.
- Click **Device Ports Only**, which includes only device ports (F_Ports and L_Ports) in the database with the specified granularity and time range
- Click **ISL Ports Only**, which includes only ISL ports (EX_Ports and E_Ports) in the database with the specified granularity and time range
- Click **Advanced Port Selection** and then click **Select Ports** if you want to select specific ports.

The Advance Port Selection dialog box opens (see [Figure 205](#)).

All of the switches that were available when the Generate Report dialog box was launched are listed. If another user has discovered or removed a fabric, switch, or port since then, it is not reflected in this list.

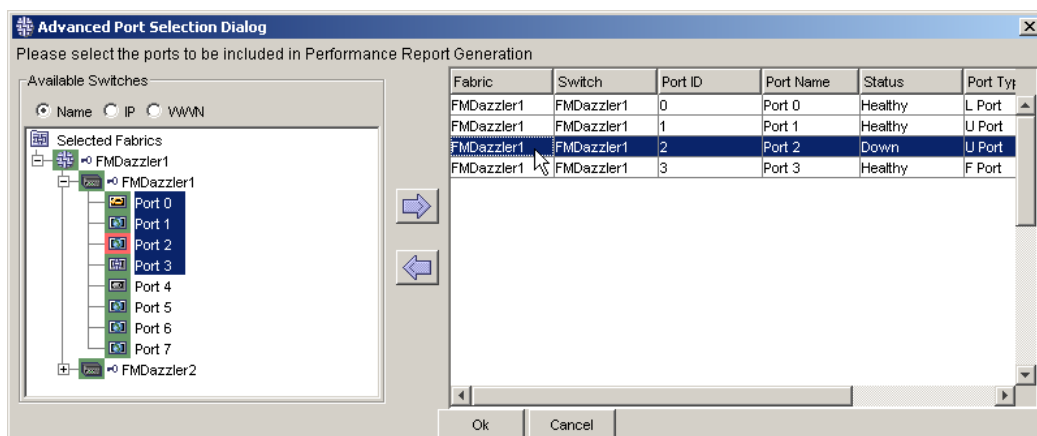


Figure 205 Selecting ports for a custom report

10. Select the ports from the Available Switches list that you want to include in the report. Use the right-arrow to move them over and then click **OK**.

The Generate Report dialog box opens again (see [Figure 204](#) on page 321).

11. Click **OK**.

If you selected **Display HTML** as the format type for your report (in [step 5](#)), the report is displayed (see [Figure 206](#)).

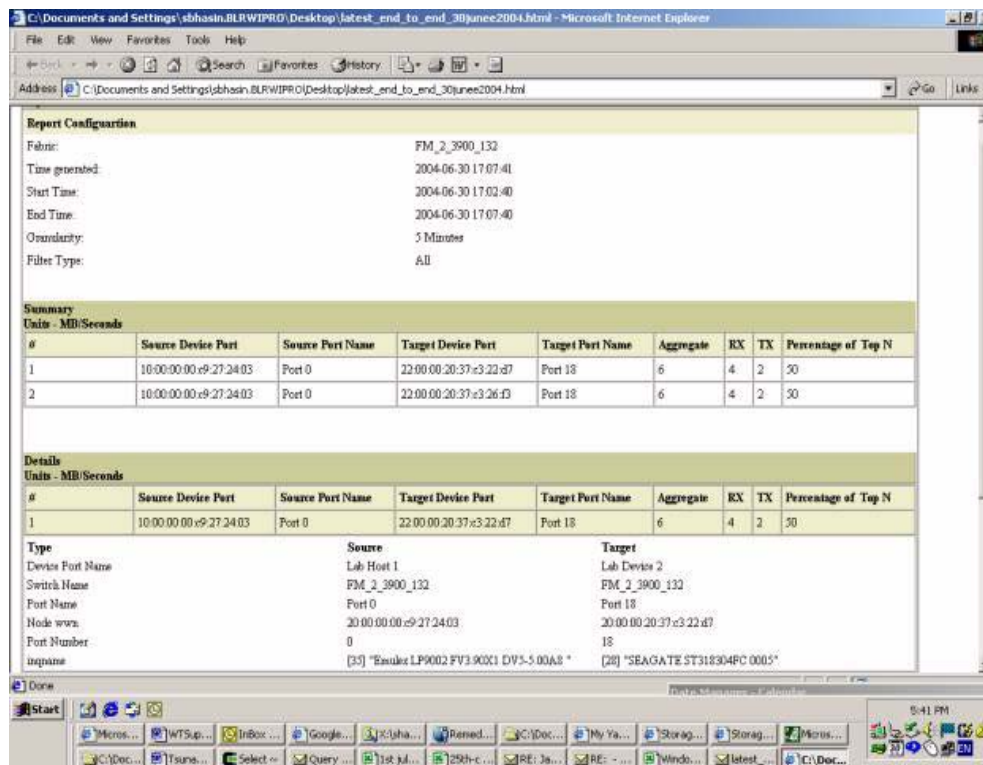


Figure 206 Custom report in HTML format

If there is no information matching the report criteria you selected, an information message is displayed stating No Performance statistics records were found matching the specified search criteria. Click **OK** in the information message to close it.

If you selected an export option (see [step 5](#)), a Save File dialog box opens. Navigate to the location you want to save the file to and click **Save**.

12. Optional:

- **Print** the report. See [Figure](#) on page 329.
- **Save** the report. See "[Saving Performance Monitor reports or graphs](#)" on page 329.
- **Export** the report. See "[Exporting reports](#)" on page 330.

Creating custom graphs

To generate custom Performance Monitor report as a graph:

1. Select a switch in the SAN Elements tab.
2. Select **Actions > Performance Monitor > Reports > Generate Custom Reports**.

The Generate Report dialog box opens (see [Figure 204](#) on page 321).

3. Click **Graph**.

4. Select one of the following report types:

For End-to-End monitoring reports:

- Top N Conversations by Generating (Tx) traffic over time T
- Top N Conversations by Receiving (Rx) traffic over time T
- Top N Conversations by Aggregate (Tx/Rx) traffic over time T

For Port Statistics reports:

- Top N of ports Generating (Tx) traffic over time T
- Top N of ports Receiving (Rx) traffic over time T
- Top N of ports Aggregate (Tx/Rx) traffic over time T

5. Enter the number (1 through 20) of results you want for the report in the Top N field.

6. Define the time range or interval using one of the following:

- Click **Last**, enter a number, and then select the time increment (**minutes**, **hours**, or **days**).
- Click **From Time**, and then enter values in the From Time and To Time fields. This includes the month (mm), day (dd), year (yyyy), hour (HH), minute (MM) and morning (AM) or night (PM).

7. Select the Granularity (the time interval between samples).

The available options are: 5 minutes, 30 minutes, 2 hours, and 1 day. See “[Granularity](#)” on page 315 for information on how granularity is calculated.

8. For Port Statistics reports only (skip to [step 9](#) for End-to-End monitoring reports). Select what ports you want displayed in your graph:



NOTE: If the port type of a switch in a fabric changes, and Performance Monitor is enabled, multiple port WWNs with different port types are displayed in the Performance Monitor table and graph reports.

- Click **All**, which includes all ports in the database with the specified granularity and time range.
- Click **Device Ports Only**, which includes only device ports (F_Ports and L_Ports) in the database with the specified granularity and time range
- Click **ISL Ports Only**, which includes only ISL ports (EX_Ports and E_Ports) in the database with the specified granularity and time range
- Click **Advanced Port Selection** and then click **Select Ports** if you want to select specific ports.

The Advance Port Selection dialog box opens (see [Figure 205](#) on page 322).

All of the switches that were available when the Generate Report dialog box opened are listed. If another user has discovered or removed a fabric, switch, or port since then, it is not reflected in this list.

9. Click **OK**.

Your custom Performance Monitor graph is displayed (see [Figure 207](#)).

If there is no information matching the report criteria you selected, an information message is displayed: No Performance statistics records were found matching the specified search criteria. Click **OK** in the information message to close it.

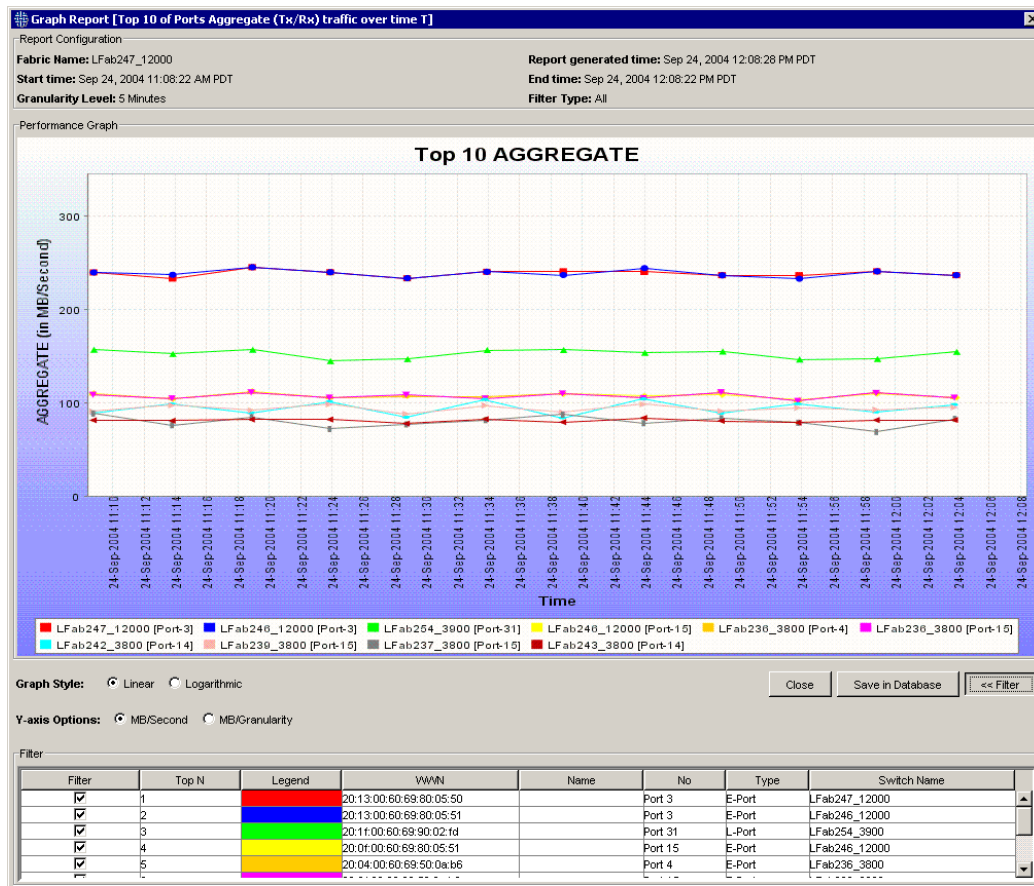


Figure 207 Custom Performance Monitor graph

10.Optional:

- **Save** the graph. See ["Saving Performance Monitor reports or graphs"](#) on page 329.
- **Edit** the graph. See ["Editing Performance Monitor graphs"](#) on page 332.

Creating and using report templates

You can use the Performance Monitor to create report templates that you can use to create future reports or graphs. Consult the following sections for information on creating report templates and generating reports or graphs from existing templates:

- ["Creating templates for reports and graphs"](#) on page 325
- ["Generating reports and graphs from templates"](#) on page 328

Creating templates for reports and graphs

To create a Performance Monitor report template:

1. Select the launch switch in the SAN Elements tab.
2. Select **Actions > Performance Monitor > Reports > Generate From Template**.

The Generate From Template dialog box opens (see [Figure 208](#)).

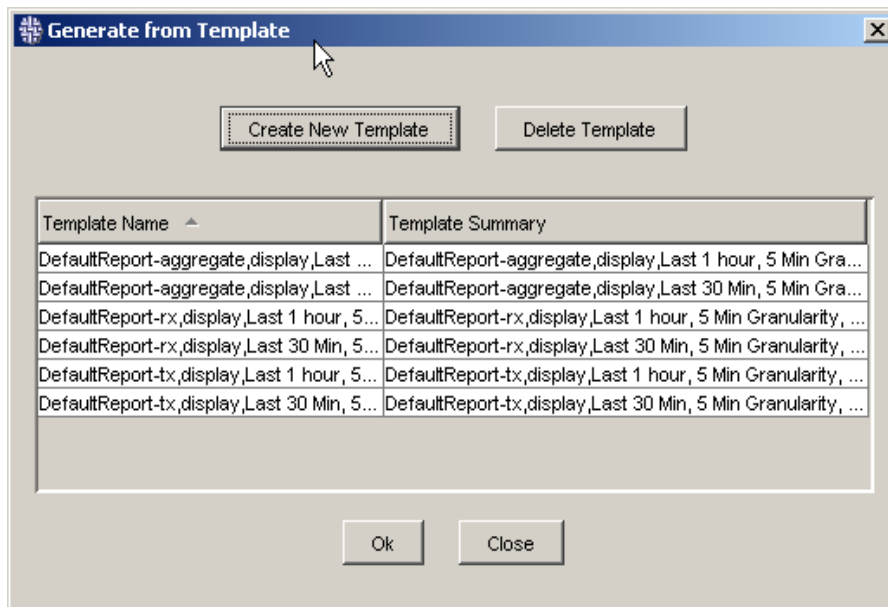


Figure 208 Create/generate report from a template

3. Click **Create New Template.**

The Generate Template dialog box opens (see [Figure 209](#)).

4. Click **Report or **Graph**.**

5. Select one of the following report/graph types:

For End-to-End monitoring reports;

- Top N Conversations by Generating (Tx) traffic over time T
- Top N Conversations by Receiving (Rx) traffic over time T
- Top N Conversations by Aggregate (Tx/Rx) traffic over time T

For Port Statistics reports:

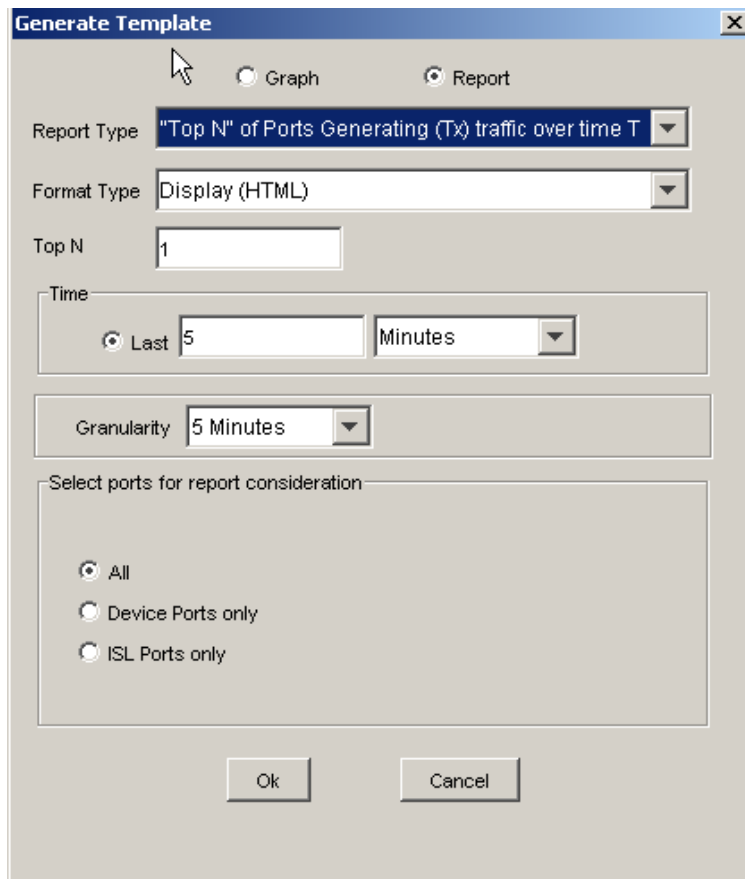
- Top N of ports Generating (Tx) traffic over time T
- Top N of ports Receiving (Rx) traffic over time T
- Top N of ports Aggregate (Tx/Rx) traffic over time T

6. Select one of the following formats for the report (this option is *not* available for graphs):

- Display HTML, which displays the report in HTML format.
- Export XML, which saves the report as an XML file. The XML format is useful if you want to export the data to another application.
- Export HTML, which saves the report as an HTML file.

7. Enter the number of results you want for the report in the Top N field.

For reports, the range is 1 through 100. The range for graphs is 1 through 20.



The "Generate Template" dialog box is shown with the following settings:

- Report Type:** "Top N" of Ports Generating (Tx) traffic over time T
- Format Type:** Display (HTML)
- Top N:** 1
- Time:** Last 5 Minutes
- Granularity:** 5 Minutes
- Select ports for report consideration:**
 - ☒ All
 - ☐ Device Ports only
 - ☐ ISL Ports only

Buttons: Ok, Cancel

Figure 209 Creating a report or graph template

8. Click **Last**, enter a number, and then select the time increment (**minutes**, **hours**, or **days**).

9. Select the Granularity (the time interval between samples).

The available options are: 5 minutes, 30 minutes, 2 hours, and 1 day. See "Granularity" on page 315 for information on how granularity is calculated.

10. For Port Statistics reports only (skip to [step 11](#) for End-to-End monitoring reports). Select what ports you want to generate the report on:



NOTE: If the port type of a switch in a fabric changes, and Performance Monitor is enabled, multiple port WWNs with different port types are displayed in the Performance Monitor table and graph reports.

- Click **All**, which includes all ports in the database with the specified granularity and time range.
- Click **Device Ports Only**, which includes only device ports (F_Ports and L_Ports) in the database with the specified granularity and time range
- Click **ISL Ports Only**, which includes only ISL ports (EX_Ports and E_Ports) in the database with the specified granularity and time range

The Generate Template dialog box opens again (see [Figure 209](#)).

11. Click **OK**.

The Save Template dialog box opens (see [Figure 210](#)).

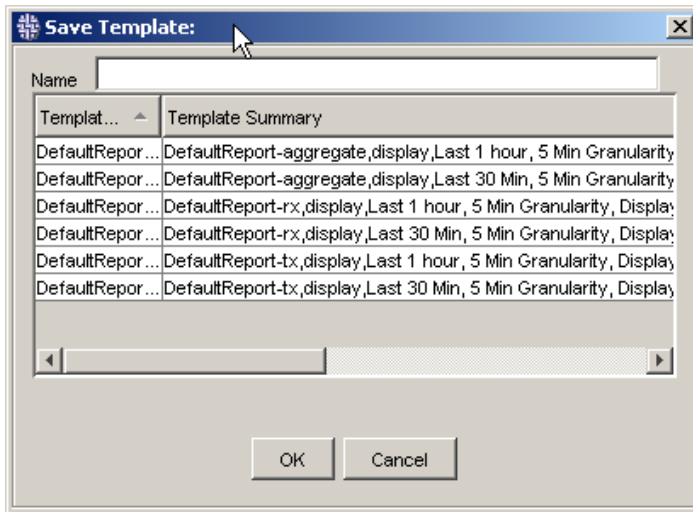


Figure 210 Save Template

12. Provide a name for the report or graph template, then click **OK**.

Generating reports and graphs from templates

The Performance Monitor feature has a set of six templates (by default) that are useful if you need to generate an ongoing report without a specified time interval. [Table 70](#) on page 317 lists the default templates.

To generate a report or graph from a Performance Monitor template:

1. Select the launch switch in the SAN Elements tab.
2. Select **Actions > Performance Monitor > Reports > Generate From Template**.
The Generate From Template dialog box opens (see [Figure 208](#) on page 326).
3. Select the template you want from the list and then click **OK**.
The report or graph is generated and displayed.
4. Click **Save in Database** to save the report or graph.
The Save Report dialog box opens.
5. Provide a name for the report or graph.
6. Click **OK**.

Saving Performance Monitor reports or graphs

To save a Performance Monitor report or graph:

1. Create a custom report or graph, generate a report or graph from a template, or edit an existing graph as described in the following sections:
 - ["Creating custom reports"](#) on page 320
 - ["Creating custom graphs"](#) on page 323
 - ["Generating reports and graphs from templates"](#) on page 328
 - ["Editing Performance Monitor graphs"](#) on page 332

The report or graph is displayed.

2. Click **Save in Database** to save the report or graph.

The Save Report dialog box opens.

3. Provide a name for the report or graph, then click **OK** to save it.

Printing Performance Monitor reports

To print a Performance Monitor report:

1. Create a custom report or generate a report from a template as described in the following sections:
 - ["Creating custom reports"](#) on page 320
 - ["Generating reports and graphs from templates"](#) on page 328

The report is displayed.



NOTE: You cannot print a graph.

2. Click **Print** to print the report.

The Print Report dialog box opens.

3. Select a printer.

4. Click **OK**.

Exporting reports

You can export Performance Monitor reports (not graphs) as HTML or XML files and open them in external applications.

To export Performance Monitor reports:

1. Create a custom report or generate a report from a template as described in the following sections:

- ["Creating custom reports"](#) on page 320
- ["Generating reports and graphs from templates"](#) on page 328

The report is displayed.

2. Click **Export as XML** or **Export as HTML** to export the report.

The Save dialog box opens.

3. Provide a filename for the report and then click **OK**.

Displaying saved reports and graphs

To display a saved Performance Monitor report or graph:

1. Select the launch switch from within the SAN Elements tab.
2. Select **Actions > Performance Monitor > Reports > Saved Reports**.

The Saved Reports dialog box opens (see [Figure 211](#)).

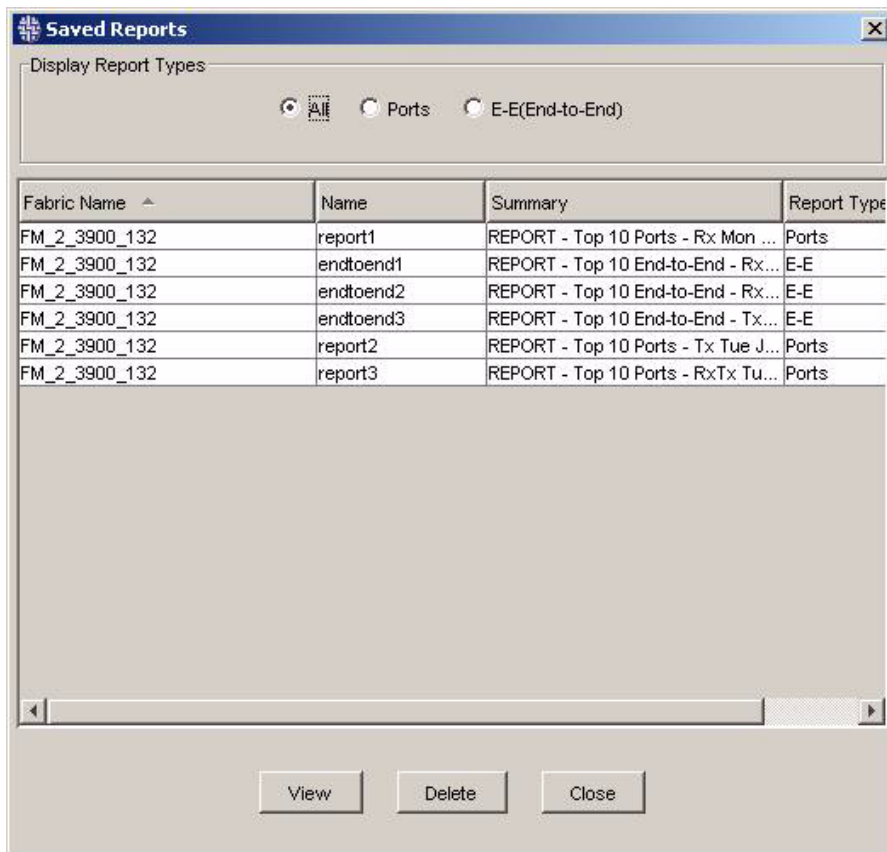


Figure 211 Saved reports and graphs

3. Select the report or graph that you want to display or do one of the following:
 - Click **All** to display all saved End-to-End and Port Statistics reports
 - Click **Ports** to display all saved Port Statistics reports
 - Click **E-E (End-to-End)** to display all saved End-to-End reports
4. Click **View**.
The report or graph is displayed.

Deleting reports and graphs

To delete a Performance Monitor report or graph:

1. Select the launch switch from within the SAN Elements tab.
2. Select **Actions > Performance Monitor > Reports > Saved Reports**.
The Saved Reports dialog box opens.
3. Select the report or graph that you want to display.
4. Click **Delete**.
The report or graph is deleted.

Editing Performance Monitor graphs

Existing Performance Monitor graphs can be edited as follows:

- Change the graph to a linear or logarithmic format
- Select different values for the Y-axis: MB/second or MB/granularity
- Filter ports

To change the graph format:

1. Create a Performance Monitor graph. See “[Creating custom graphs](#)” on page 323.
2. Display the graph (see [Figure 207](#) on page 325).
3. Click **Linear** to display the graph as a linear graph or click **Logarithmic** to display the graph as a logarithmic graph.

To change the Y-axis values:

1. Create a Performance Monitor graph. See “[Creating custom graphs](#)” on page 323.
2. Display the graph (see [Figure 207](#) on page 325).
3. Click **MB/Second** to display MB/second values on the Y-axis or click **MB/Granularity** to display MB/granularity on the Y-axis.

To display information selected ports only:

1. Create a Performance Monitor graph. See “[Creating custom graphs](#)” on page 323.
2. Display the graph (see [Figure 207](#) on page 325).

A list of the ports that correspond to the graph are listed in the graph report. To display only a subset of the ports in the graph, you can filter them out.

3. A selected check box indicates information from that port is displayed in the graph. Use the check boxes to deselect the ports you do not want displayed in the graph.
4. Click **Filter Ports**.

Displaying Performance Monitor reports in external applications

When you export Performance Monitor reports in XML format (see “[Exporting reports](#)” on page 330), an `xslt` file (style sheet) is also saved with the XML file. The `xslt` file can be used to translate the XML file into an Excel spreadsheet or another software application that allows you to open XML files. You can edit Performance Monitor reports in the Excel spreadsheet or similar software application.



NOTE: You do not have to use an `xslt` file, but the translated information is not very useful without the style sheet.

To open a Performance Monitor report (saved as an XML file) in Excel:

1. Launch Excel 2002 (or later).
2. Select **File > Open**.

The Open dialog box opens.

3. Navigate to the XML file, and click **Open**.

The Import XML dialog box opens and asks if you want to open a stylesheet.

4. Open the file using one of these methods:
 - Click **Open the file with the following stylesheet applied**: The `xslt` file created by Fabric Manager is the default selected file. You can either use that file or navigate to another style sheet of your own. Click **OK** to display the information in an Excel spreadsheet.
 - Click **Open the file without applying a stylesheet** (not recommended): The information is displayed in an Excel spreadsheet without any formatting.

20 Troubleshooting

This chapter describes a few problem scenarios that can occur while using Fabric Manager and provides troubleshooting tips to help you resolve these problems. Consult the following sections for troubleshooting information specific to the suspected trouble area:

- ["Checking Fabric Manager" next](#)
- [Example of fmsupportshow output for Solaris](#), page 337
- [Checking client/server interaction](#), page 339
- [Checking the server-side](#), page 340
- [Checking fabric discovery problems](#), page 341
- [Database \(Services window\)](#), page 343
- [Pinpointing additional problem areas](#), page 344

Checking Fabric Manager

For all problems with Fabric Manager, follow these steps:

1. For Windows: Generate fmsupportshow output by selecting **Start Menu > Programs > Fabric Manager > Utilities > Capture FM Support Information**.

A command window opens (see [Figure 212](#)) and it runs the `fmsupportshow.bat` file.

For Solaris: Run the following script to capture the problem:

```
installdir/bin/fmsupportshow.sh
```

Scripts are located in the `$FM_HOME/bin` directory. See [Figure 213](#) on page 337 for an example of the fmsupportshow output for Solaris.

2. Obtain a screenshot of the client (if you are reporting a GUI problem)
3. Include any fabric/switch activities: firmware downloads, reboots, segmentation, merge, and so on.
4. Include any actions executed from Fabric Manager.
5. Report the problem to technical support (with a .zip or tar file).

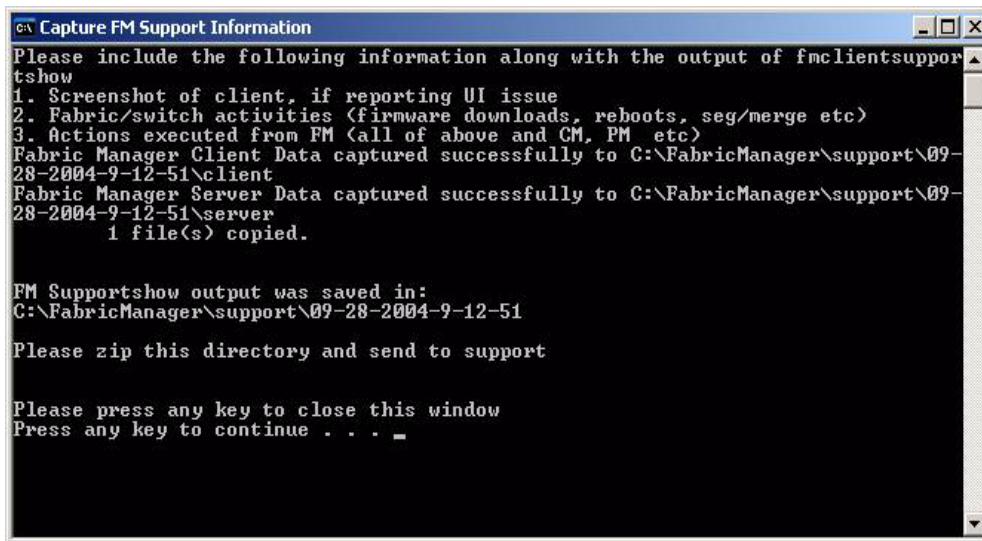


Figure 212 Capture Fabric Manager support information

The `fmsupportshow` utility provides the following information in the specified destination directory:

For Windows:

- `..\FabricManager\support\date and time directory\client`
- `..\FabricManager\support\date and time directory\server`

The `fmsupportshow` utility creates a directory using a combination of date and time stamp and copies all these files into this directory.

Client-related information is copied to the `client` directory; server-related information is copied to the `server` directory.

For example, in [Figure 212](#), the files are located at:

- `C:\FabricManager\support\09-28-2004-9-12-51\client`
- `C:\FabricManager\support\09-28-2004-9-12-51\server`

For Solaris: See [Figure 213](#) for an example for `fmsupportshow` output in Solaris.

```

fmgr007006:/test/fm4.4/FabricManager/bin# ./fmsupportshow.sh
creating directory /test/fm4.4/FabricManager/support/2004-09-28-09-28-12
Please include the following information along with the output of
fmclientsupportshow
1. Screenshot of client, if reporting UI issue
2. Fabric/switch activities (firmware downloads, reboots, seg/merge
etc)
3. Actions executed from FM (all of above and CM, PM etc)
creating directory /test/fm4.4/FabricManager/support/2004-09-28-09-28-12/client
Fabric Manager Client data captured successfully to /test/fm4.4/
FabricManager/support/2004-09-28-09-28-12/client
creating directory /test/fm4.4/FabricManager/support/2004-09-28-09-28-12/server
Fabric Manager Server data captured successfully to /test/fm4.4/
FabricManager/support/2004-09-28-09-28-12/server
fmgr007006:/test/fm4.4/FabricManager/bin#

```

Figure 213 Example of fmsupportshow output for Solaris

Checking the client side

If you suspect the problem is related to the client-side, check the following areas:

- ["Authentication issues \(unable to login\)"](#) next
- ["Client access to switches"](#) on page 338
- ["Client-side CPU usage"](#) on page 338

If the problem persists or cannot be resolved, see ["Capturing and reporting client-side issues"](#) on page 338.

Authentication issues (unable to login)

If the user is unable to login to the Fabric Manager server, follow these steps:

1. Check the userid and password.
2. Check the Login Module and Domain settings in the server:

```
installdir/server/server/fmserver/deploy/fmauth-service.xml
```

Depending on the platform you have installed, there are three possible valid settings within the *fmauth-service.xml* file:

- Fabric Manager server running under Windows when using Windows domain authentication:

```

<attribute name="LoginModule">Win</attribute>
<attribute name="DomainName">"your_domain"</attribute>

```

- Fabric Manager server running under Windows or Solaris when using switch-based authentication:

```

<attribute name="LoginModule">Switch</attribute>
<attribute name="Switches">"10.33.10.1,10.33.7.111"</attribute>

```

- Fabric Manager server running under Solaris when using NIS authentication:

```
<attribute name="LoginModule">NIS</attribute>
<attribute name="DomainName">yourdomain.com</attribute>
<attribute name="NISServer">"your_NISServer"</attribute>
```

- Fabric Manager server running under Solaris when using local password authentication:

```
<attribute name="LoginModule">File</attribute>
```



NOTE: If you are using the local password authentication, the DomainName attribute is missing from the XML file. If you are using the NIS authentication, there is an extra parameter in the XML file called NISServer.

3. Check the Fabric Manager server log for any errors:

```
installdir/server/server/fmserver/log/server.log
```

Example

```
2004-05-27 17:11:19,256 INFO
[com.hp.fabman.auth.server.FMAuthRemoteServer] Creating New Login
Session: user = [stsun], client host = [192.168.42.139], session id= [2]
2004-05-27 17:11:19,272 INFO
[com.hp.fabman.auth.server.WinNTLoginModule] Authenticating user
[stsun] using [hp] domain
2004-05-27 17:11:20,272 ERROR
[com.hp.fabman.auth.server.WinNTLoginModule] Authentication failed for
[hp/stsun]
```

Client access to switches

If the client cannot access some of the switches, you need to check the IP connectivity between the client/server, the client/switch, and the server/switch; then check the webserver on the switch by invoking Advanced Web Tools on that switch.

Client-side CPU usage

If the client-side CPU usage is too heavy and has an unusually sluggish or slow response, you should check the recommended configuration.

Capturing and reporting client-side issues

For all problems with Fabric Manager, follow these steps:

1. For Windows: Generate fmsupportshow output by clicking **Start Menu > Programs > Fabric Manager > Utilities > Capture FM Support Information**.

A command window opens (see [Figure 212](#) on page 336) and it runs the fmsupportshow.bat file.

For Solaris: Run the following script to capture the problem:

```
installdir/bin/fmsupportshow.sh
```

Scripts are located in the \$FM_HOME/bin directory. See [Figure 213](#) on page 337 for an example of the fmsupportshow output for Solaris.

2. Obtain a screenshot of the client (if reporting a GUI problem)
3. Include any fabric/switch activities: firmware downloads, reboots, segmentation, merge, and so on.

4. Include any actions executed from Fabric Manager.
5. Report the problem to technical support (in a .zip or tar file).

The `fmsupportshow` utility provides the following information in the specified destination directory:

For Windows:

- `..\FabricManager\support\date and time directory\client`
- `..\FabricManager\support\date and time directory\server`

The `fmsupportshow` utility creates a directory using a combination of date and time stamp and copies all these files into this directory.

Client related information is copied to the `client` directory; server related information is copied to the `server` directory.

For example, in [Figure 212](#) on page 336 the files are located at:

- `C:\FabricManager\support\09-28-2004-9-12-51\client`
- `C:\FabricManager\support\09-28-2004-9-12-51\server`

For Solaris: See [Figure 213](#) on page 337 for an example for `fmsupportshow` output in Solaris:

Checking client/server interaction

If you suspect the problem is related to an interaction between the client and the server, check the following areas:

- ["No client/server interaction"](#) next
- ["Client/server version mismatch"](#) on page 339
- ["Determine client or server problem"](#) on page 340

No client/server interaction

If the client cannot talk to the server, follow these steps:

1. Ensure that the server name is correct.
2. Ensure that the port number is correct.
3. Ensure there is IP connectivity (ping, trace route, etc.)
4. Check for the presence of firewalls.
5. If a firewall is present, ensure that the proper ports are opened.

Fabric Manager takes the first six ports (numerically) starting with the port entered during the installation. For example, if you entered 24600 as the port during the installation, then ports 24600 through 24605 are included. Ensure that ports 20, 21, and 23 are open. Also, for HTTP and API purposes, ports 80, 111, 600 through 1023, and 1024+ must also be open.

Client/server version mismatch

If the client has an incompatible version, a warning is issued. Upgrade the component (client or server) with the lower version.

Determine client or server problem

To determine whether the problem is related to the client or the server, follow these steps:

1. Run another client.
If the other client displays correct data, the problem is probably client-related. If it displays incorrect data, then the problem is probably associated with the server.
2. Check the server log for any errors.
If errors exist, it is probably a server problem if the client is operating incorrectly.

Checking the server-side

If you suspect the problem is related to the server-side, check the following areas:

- "Server cannot access switches" next
- "Server-side CPU usage" on page 340

If the problem persists or cannot be resolved, see "Capturing and reporting server-side issues" on page 340.

Server cannot access switches

If the server cannot access any switches, follow these steps:



NOTE: Fabric Manager displays inaccessible switches with a blue icon.

1. Ensure that there is IP connectivity to the switches.
2. If you are running secure Fabric OS, check `http_policy`.
3. Ensure the version of the Fabric OS is supported.

Serverside CPU usage

If the server-side CPU usage is too heavy and has an unusually sluggish or slow response, check the recommended configuration.

Capturing and reporting server-side issues

For all problems with Fabric Manager, follow these steps:

1. For Windows: Generate `fmsupportshow` output by clicking **Start Menu > Programs > Fabric Manager > Utilities > Capture FM Support Information**.

A command window opens (see [Figure 213](#) on page 337) and it runs the `fmsupportshow.bat` file.

For Solaris: Run the following script to capture the problem:

```
installdir/bin/fmsupportshow.sh
```

Scripts are located in the `$FM_HOME/bin` directory. See [Figure 213](#) on page 337 for an example of the `fmsupportshow` output for Solaris.

2. Obtain a screenshot of the client (if reporting a GUI problem)
3. Include any fabric/switch activities: firmware downloads, reboots, segmentation, merge, and so on.

4. Include any actions executed from Fabric Manager.
5. Report the problem to technical support (via .zip or tar file).

The `fmsupportshow` utility provides the following information in the specified destination directory:

For Windows:

- `..\FabricManager\support\date and time directory\client`
- `..\FabricManager\support\date and time directory\server`

The `fmsupportshow` utility creates a directory using a combination of date and time stamp and copies all these files into this directory.

Client related information is copied to the `client` directory, and server related information is copied to the `server` directory.

For example, in [Figure 212](#) on page 336 the files are located at:

- `C:\FabricManager\support\09-28-2004-9-12-51\client`
- `C:\FabricManager\support\09-28-2004-9-12-51\server`

For Solaris: See [Figure 213](#) on page 337 for an example for `fmsupportshow` output in Solaris.

Checking fabric discovery problems

If you are having fabric discovery problems, identify the problem (see below) and try the recommended solution:

- Switch does not exist or there is no Ethernet path to the switch: Attempt to ping the switch from both the client and the server.
- IP address is not properly formed: Fix the IP address and/or URL
- Domain name is unknown to the DNS: Check the DNS configuration
- HTTP service on the switch is not running (or is running too slow): Attempt to use Advanced Web Tools via the client.
- Fabric was reconfiguring or unstable at the time of the attempted launch: Use the `fabricshow` command to see if the fabric is stable.
- Switch does not have Advanced Web Tools license: Attempt to use Advanced Web Tools via the client host.
- Switch cannot deliver `Fabricinfo.html`: It is not an HP StorageWorks switch.
- Launch switch is already monitored in another fabric: Check all of the loaded fabrics on the client GUI.
- Client has lost connection to the server (or server is down):

For Windows: From the Start menu, select **Settings > Control Panel > Administrative Tools > Services > Fabric Manager Server** (see [Figure 214](#)). Then use the Action menu to start or restart the server.

For Solaris: Run `fmdir/server/bin/restartFabricManagerServer.sh`

This script checks whether the database is running. If the database is not running, the script restarts it. Then it stops and restarts the Fabric Manager server process.

- Database is not running:



CAUTION: Before stopping the database process, you must first stop the Fabric Manager server process.

For Windows: From the Start menu, select **Settings > Control Panel > Administrative Tools > Services > Adaptive Server Anywhere- fabmandb** (see [Figure 215](#) on page 343). Then use the Action menu to start or restart the database.

For Solaris: Stop and restart the Fabric Manager server process:

1. Run `fmdir/server/bin/stopFabricManagerServer.sh`.
2. Run `fmdir/server/bin/stopDBServer.sh` to stop the database process.
3. Run `fmdir/server/bin/startDBServer.sh` to restart the database process.
4. Run `fmdir/server/bin/restartFabricManagerServer.sh` to start the database and Fabric Manager server process.

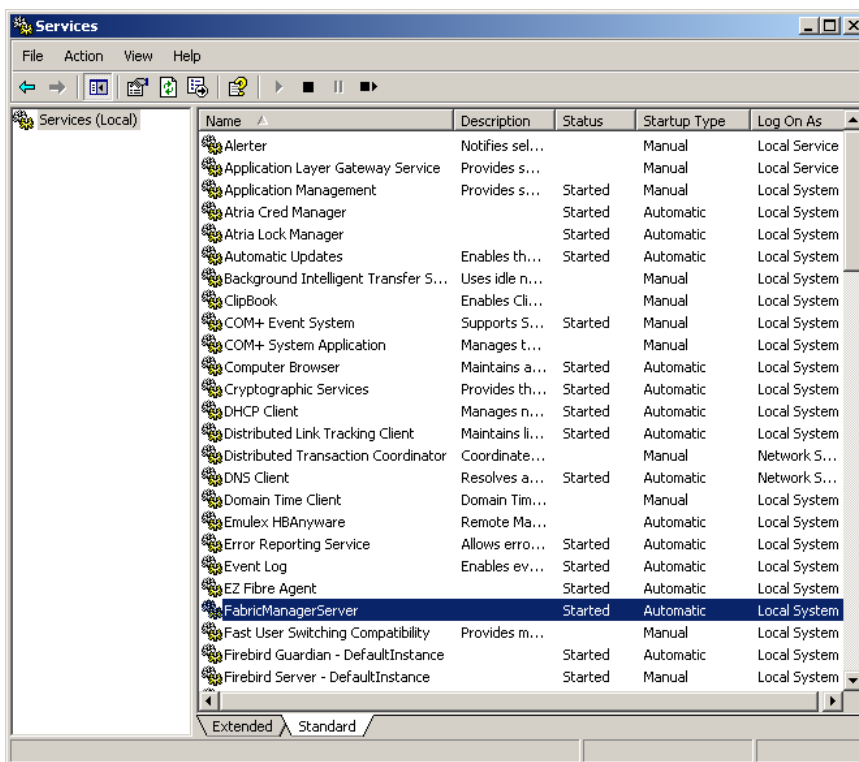


Figure 214 Fabric Manager server (Services window)

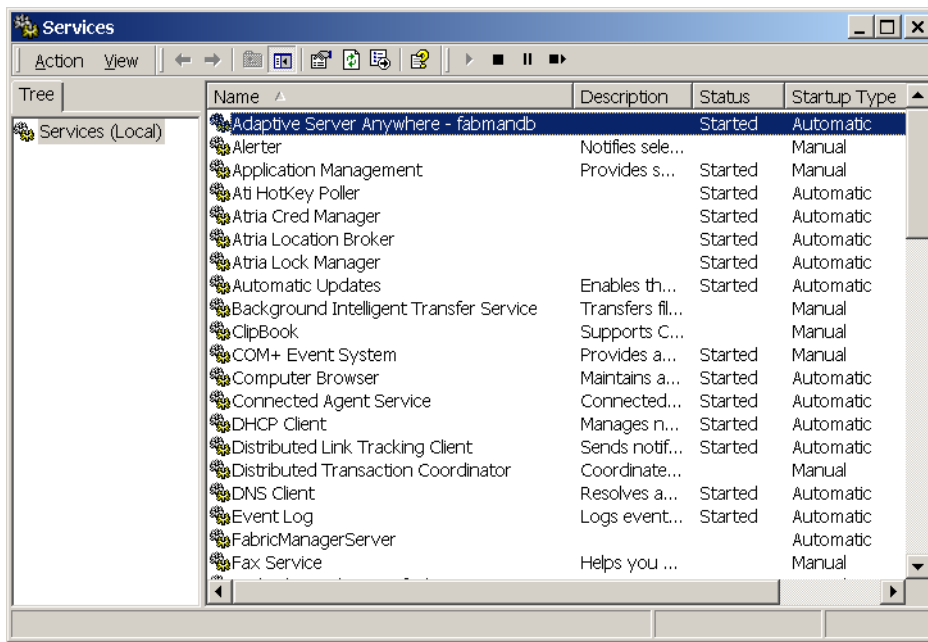


Figure 215 Database (Services window)

Saving the supportshow command output

If a switch is not operating as expected, use the supportshow command to capture diagnostic data for the switch. You can use Fabric Manager to save the supportshow command output as a text file that you can troubleshoot yourself or send to your technical support contact for analysis. For multiple switches, multiple text files are created, one for each switch, and archived together into a single .zip file.

To print the supportshow command output:

1. Select a switch from the SAN Elements tab.
2. Select **Actions > Supportshow**.
A save dialog box opens.
3. Enter a name for the file and select a location where you want to save the file.



NOTE: You can also generate fmsupportshow (in Windows) by clicking **Start Menu > Programs > Fabric Manager > Utilities > Capture FM Support Information**.

Pinpointing additional problem areas

This section describes specific problems that you may experience with Fabric Manager. A solution to the problem is included.

Installing Fabric Manager client on Solaris using BASH

When installing the Fabric Manager client on a Solaris 8 OS with a BASH as the default shell, you must run the following command from the command line before launching the Fabric Manager client:

```
bash --login
```

If you do not run this command before launching the client, Fabric Manager does not run properly.

Cannot locate Fabric Manager license key and serial number

Fabric Manager v4.1.0 and later stores the serial number and license key in a file each time a user successfully registers Fabric Manager. The file name is `fmlicense.txt` and should be in the local Fabric Manager user directory. The file contains the version of Fabric Manager installed, the serial number, license key, license type, and licensing date. If you cannot locate the file, contact Technical Support.

Switches and hosts no longer recognize an HBA after a firmware download to the HBA

During the firmware download to HBA process, if the switch (that the HBA is attached to) is rebooted, or the host (that the HBA is attached to) is rebooted, the firmware in the HBA flash memory can become corrupted and HBA is not able to log in to the switch or respond to the query from the switch. Thus, from both the Fabric Manager and the switch point of view, this HBA does not appear and drops out of the name server list. To solve this problem, use HBAnyware on the attached host and reload the firmware on the HBA.

503 service unavailable or overloaded error

The 503 error indicates that Fabric Manager has discovered a switch whose web server is unavailable or overloaded. If you receive this error, try to poll the switch using only one Fabric Manager server.

When a switch displays this error after Fabric Manager has already discovered the switch, the error is displayed only in the error log.

Although switches can appear as unreachable in Fabric Manager when they receive this error, the error occurs more frequently on switches that run firmware versions 2.x and 3.x.

Installation wizard does not launch

Run the DOS command `dxdiag` and make sure that the graphics tests run without errors. If any version of DirectX files or any diagnostic files are missing, go to Microsoft's Web site and upgrade to the latest version of DirectX.

Installation wizard locks up

Press the **Ctrl** key until a DOS Java console displays. The console captures a log of the entire installation process.

Incorrect performance monitoring port statistics

If you are running a 4.x version of Fabric OS on a switch that is v4.2.0b or earlier, the Advanced Performance Monitoring port statistics for it are returned incorrectly. You must upgrade the firmware on the 4.x switch to Fabric OS v4.2.0c or later.

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